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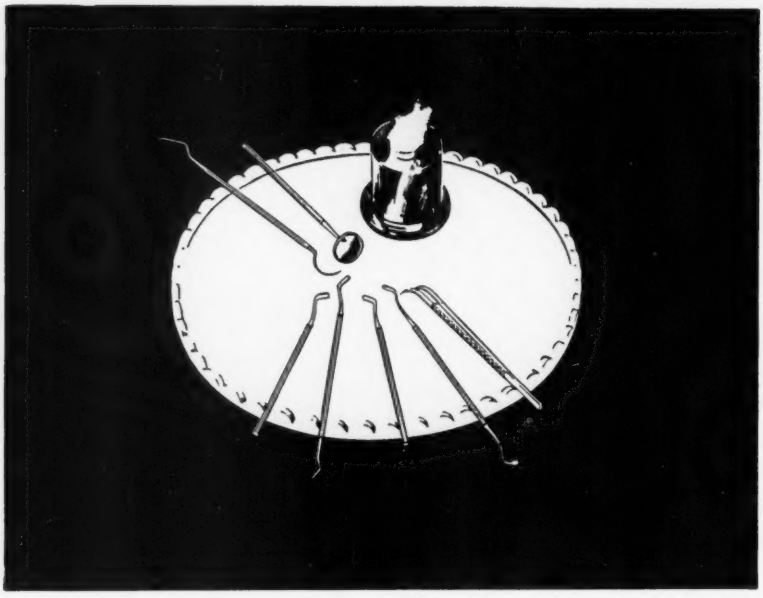

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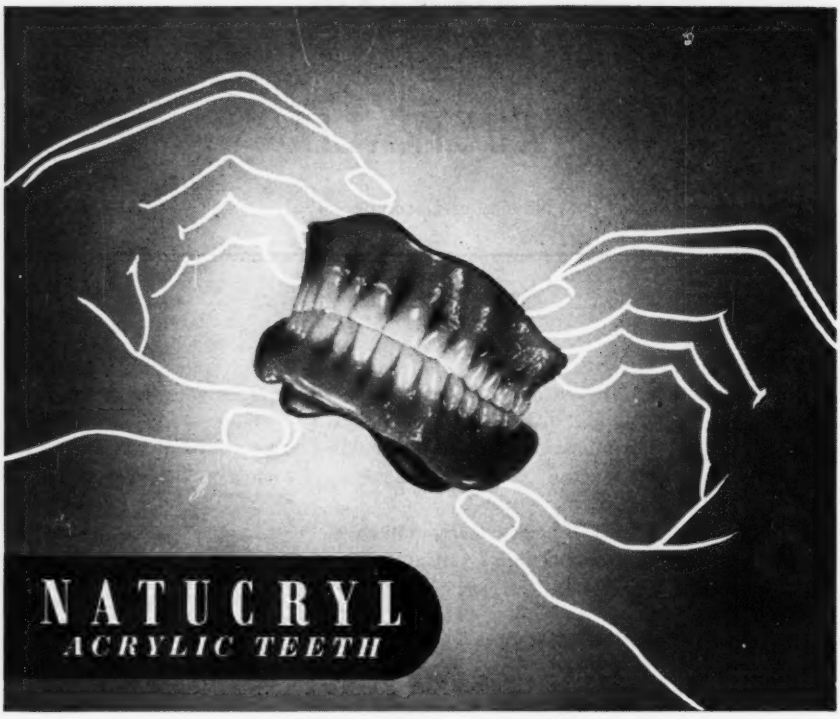

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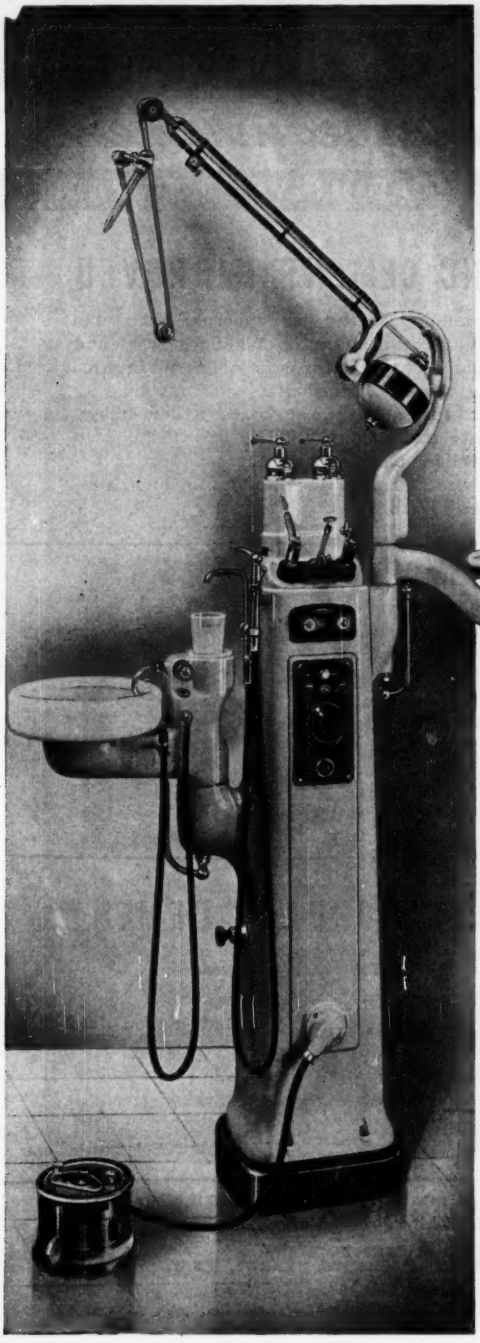

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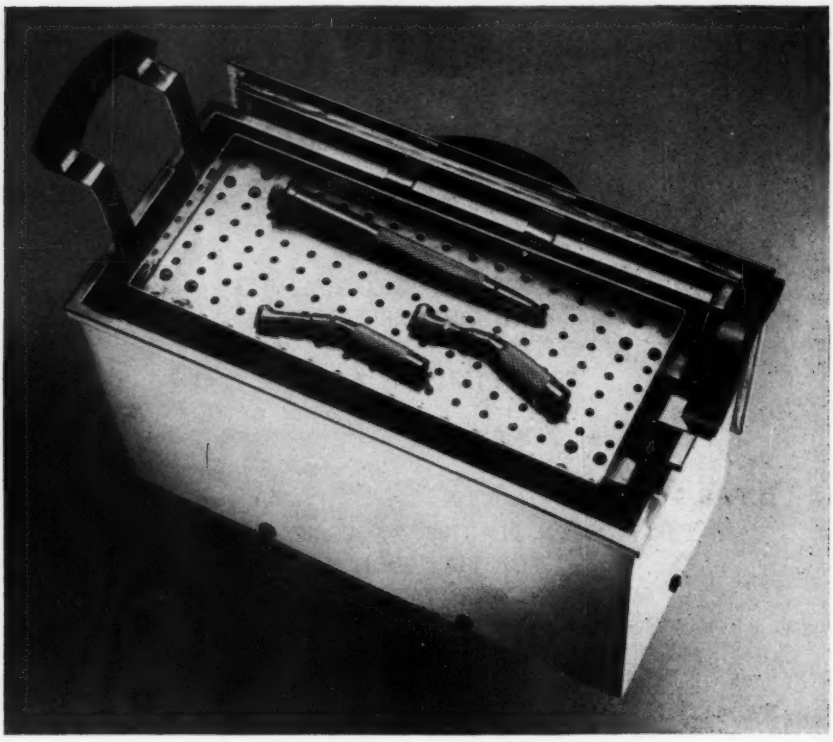

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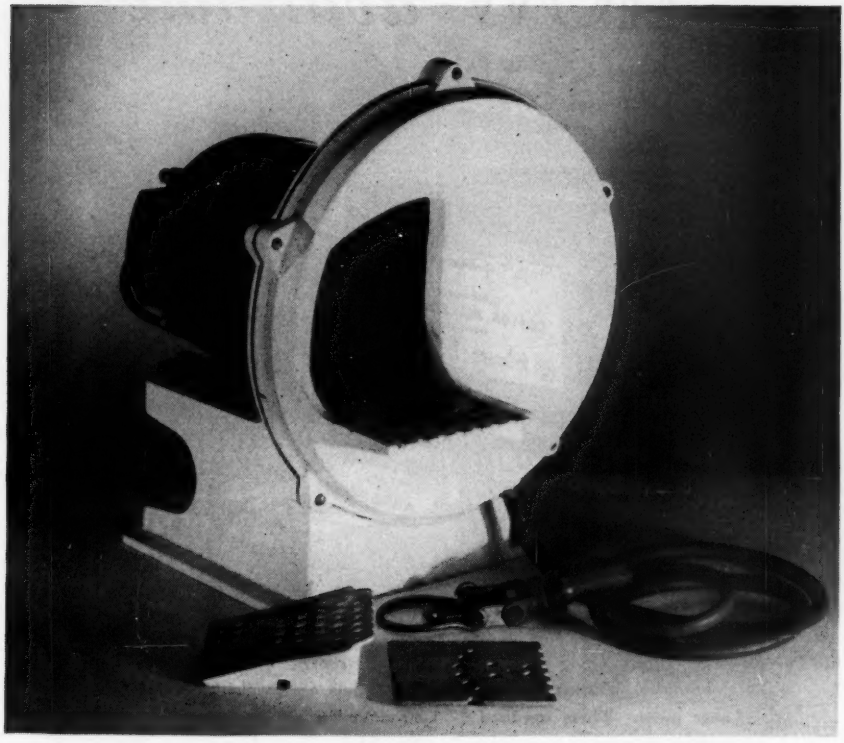

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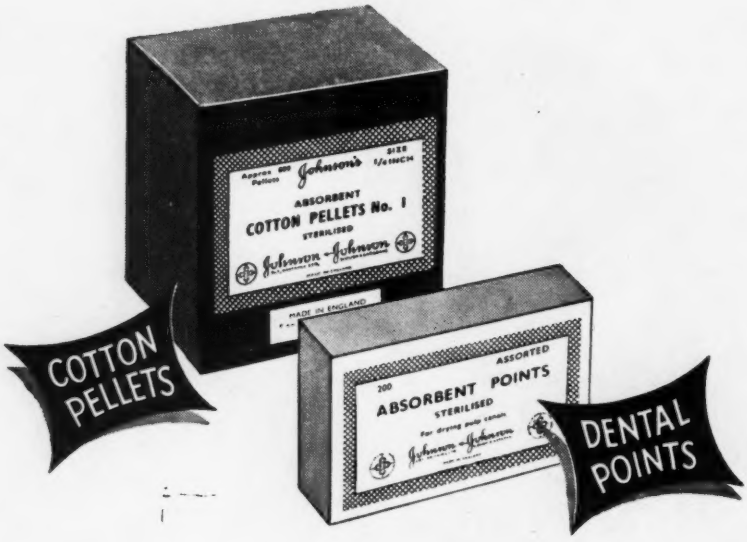

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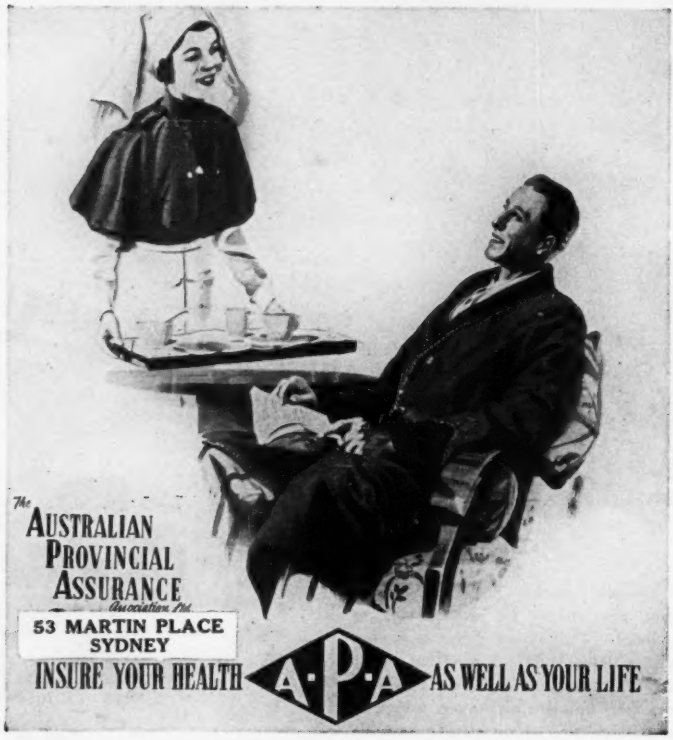

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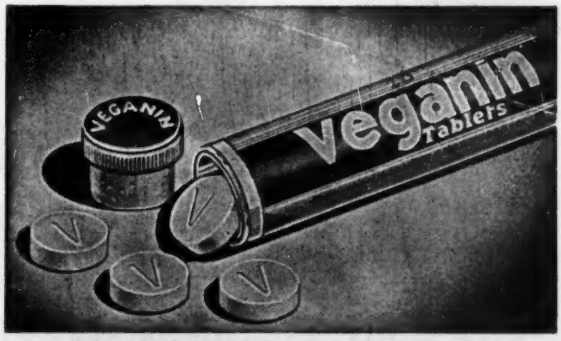

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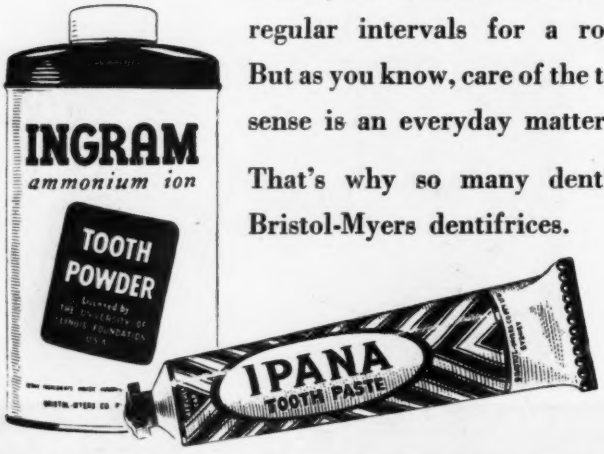

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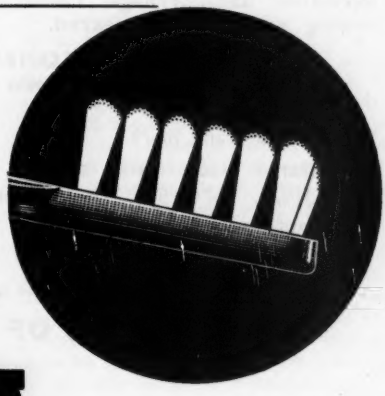

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The DENTAL Journal OF AUSTRALIA

Vol. 23 November-December, 1951 No. 11-12

FUNCTIONAL RETENTION IN PRE-ANGULAR RESECTION FOR PROTRUSIO MANDIBULI*†

STUART SCOUGALL, M.B., CH.M. (SYD.) AND
GORDON COLVIN, M.B., B.S., M.CH., ORTH.

Protrusio mandibuli is the absolute or relative projection of the mandible in relation to the maxillae, and prognathism is here restricted to its anthropological significance as defined by Flower's Index or other method.

Surgical techniques previously devised for the treatment of protrusio mandibuli, whether performed in the ramus or body of the mandible, rely upon immobilisation of the jaws by dental splints in their aim to maintain correct occlusion and the fragments in satisfactory position. This has necessitated involved pre-operative dental preparation, and post-operatively required the patient to submit to the undeniable discomforts resultant upon complete fixation of the jaws. With such methods of fixation, the relative instability at the osteotomy site tends to inaccurate apposition and difficulties in union.

We seek to overcome these two objections by securing exact and rigid apposition of the fragments by intraosseous fixation. This allows temporo-mandibular function for nutrition and speech, enables oral toilet, and provides satisfactory conditions for early union.

When the osteotomy is performed in the body of the mandible, this method also provides more efficient control of the posterior fragment for purposes of occlusion.

Such fixation depends upon the type of Kirschner wire and its manner of insertion, which will be dealt with in detail under operative technique.

In general, the established condition of protrusion which reaches 0.5 cm., or more, should receive surgical consideration. The question might be examined in relation to preventive methods applicable at the time of onset of the condition or in its early stages. Since the typical causation of protrusion is endocrine, some method may eventually emerge on that basis, which will control not only the mandible but the other skeletal manifestations of the pituitary lesion. In the meantime, another possible avenue is control of local growth, having some analogy to the control in long bones. This is achieved by a critical pressure exerted on the epiphyseal plate or by its surgical ablation. In the long bones of the skeleton the method of growth is by ossification in cartilage and this bone growth, which takes place at the periphery of the epiphyseal plates, can be diminished about the whole circumference, resulting in a shortening of the limb. Growth can be brought to a standstill, and then, at a later date, be permitted to function again. This control is dependent upon the fact that, at some adequate critical pressure upon the epiphyseal plate, the growth factor is prevented from functioning. In surgical practice this pressure on the long bones is attained by stapling across the epiphyseal plate. Removal of the stapling at a suitable time allows growth to proceed again. When sufficient staples are inserted at the circumference of the plate, the total growth of the limb is diminished for the period of the stapling. The same principle can be used to control angulation at the growing end of the bone by the use of stapling to slow the growth of one side only, for a limited time.

Finally, growth may be brought to a complete and permanent standstill either by continuance of the stapling method or surgical

*Read at the Twelfth Australian Dental Congress, Sydney, August, 1950.

†A fuller version of this paper, with illustrations, may be found in Oral Surgery, Oral Medicine, Oral Pathology, 4:695, 1951.

ablation of the epiphyseal plate and the limb then ceases to grow insofar as it is dependent upon that growth centre[1-5].

In the mandible, growth is by ossification in membrane, with the omission of the primary cartilaginous stage, differing to that extent from ossification in cartilage.

A wide literature is at our disposal on bone growth in the mandible from the broad biological background of evolutionary, genetic, environmental, anatomical and histological aspects[6-10]. This problem of bone growth in the mandible presents special difficulties, and our knowledge may be extended by experimental growth control. Research along these lines is under consideration in association with the Anatomy Department, University of Sydney.

What, for instance, would be the effect on the shape and length of the mandible by the removal of the growth centre in the condyle, either temporarily or permanently, during some stage in the growth period[11], and how would this act in a case of commencing protrusion? The effect of disease, injury, or trauma at operation at the condylar centre, is discussed by Rushton[12], Engel and Brodie[13], and Wang-Norderud and Lossius[14]. What also would be the effect of surgical ablation or control of the area of subperiosteal apposition along the posterior border above the angle, in conditions of normal and abnormal bone growth? With our present knowledge of the other factors in mandibular growth, their control in this growing period might offer suggestions for the ultimate control of protrusion from its early stages.

While protrusion may exist with other abnormalities requiring separate or concurrent operative approach, the condition will be discussed here in the simple form. From the historical angle, it will be seen that the present methods have evolved through a multiplicity of procedures over a long period.

Kostecka[15] gives the results of his procedure in 1934, where he lists the numerous previous methods and states that they are too complicated, attended with technical difficulties and the possibility of injuries to the nerves and blood vessels. He then details his method of dividing with a Gigli saw the bone between the centre of the sigmoid notch and the posterior edge of the mandible about half-way between the condyle and the angle. While claiming safety and ease of technique for this operation, he states that often great force is necessary to push the mandible back. In addition, he adds his opinion that no one method is universally applicable. This type of osteotomy requires dental fixation for about twelve weeks and further elastic control until stabilised.

There are numerous other modifications of surgical treatment by osteotomy in some part of the ascending ramus, such as the post-angular sliding resection of Winter.

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11. Keith, A.—An inquiry into the nature of the skeletal changes in acromegaly: The Lancet, 1:993-1002, 1911.
12. Rushton, M. A.—*op. cit.*
13. Engel, M. B. and Brodie, A. G.—Condylar growth and mandibular deformities: Surgery, 22:976-991, 1947.
14. Wang-Norderud, R. and Lossius, S.—Unilateral hyperplasia of the mandibular condyle: Acta Odont. Scand., 8:44-52, 1948.
15. Kostecka, F.—A contribution to the surgical treatment of open bite: Internat. J. of Orthodontia, Oral Surg. & Rad., 20:1082-1092, 1934.

Winter, Winter and Winter[16], discussing the surgical correction of protrusion, state their belief that the method of sectioning the mandible directly above the angle of the jaw has certain distinct advantages over other procedures, although they admit some disadvantages. They claim that there is no scar formation early or late, no risk in regard to the facial nerve or parotid gland, and no oral contamination. They use dental fixation for retention of position. The authors state that complete regeneration of the mandibular nerve takes place, and that the vitality of teeth is not affected. The bone section is done with a Gigli saw, but the upper fragment is not controlled. A fixation period of ten weeks is the practice. In a series of 50 results, three cases of fibrous union are reported.

Osteotomy of the horizontal ramus was first performed by Hullihen in 1849 and then by Blair in 1897, following which this site has been selected by numerous other surgeons.

Our preference for the body of the mandible as the site for the resection followed our experience with intraosseous fixation in fracture of the edentulous mandible. Over a long series of cases this method, while allowing free temporo-mandibular function, gave regular firm fixation clear of any significant complications, and safety in anaesthetic recovery. This intra-mandibular method evolved in 1939, following an enquiry by Professor A. J. Arnott on the possibility of skeletal fixation in such fractures. The paper giving details and results of this procedure was presented by one of us (S.S.) at a combined meeting at the Dental Hospital, Sydney, in 1943. This method constitutes the basis of the present procedure for protrusion.

The freedom of temporo-mandibular function from the time of operation is of great comfort to the patient, but should the necessity arise, it also allows intermittent or continuous dental fixation by splints.

We are supported in our selection of this site by Thoma who, in his treatise on Oral Surgery[17], gives an exhaustive analysis of the reasons for his preference in selecting the body of the mandible as the optimum site for resection in protrusio mandibuli. Thoma mentions the possibility of retention in this type of osteotomy by transosseous wiring or plating without additional fixation. The latter method is discussed by Sturgis and Holland[18], using a four-screw Sherman plate bilaterally. Our own experience of plating in orthopaedic work suggests that superficial sites are less favourable for plating. The contour of the mandible, and the length of plate and screws present obvious difficulties.

Dingman[19] recommends, when the corresponding tooth is removed prior to operation, that the section of alveolus above the neurovascular bundle should be removed. Then about four weeks later, at the main procedure, only that part of the mandible below the neurovascular bundle requires section, thus avoiding compounding the operative field into the mouth and preserving the neurovascular bundle.

We have not found it desirable to adopt this procedure. Following transection, regeneration of the nerve has been satisfactory. On no occasion have we experienced any complication from oral sepsis, now more remote with prophylactic chemotherapy, and the tissues filling this gap at the end of several weeks would tend to make accurate apposition and alignment difficult and militate against union in that area.

Operative Procedure.

The entire procedure is performed by an extra-oral approach. An incision of approximately three inches in length is made below and parallel to the body of the mandible, advantage in cosmetic effect being gained by its placement in a natural crease.

The platysma is split down to bone in the direction of its fibres by the Halstead technique, and wide retraction made in the line of the skin incision. The periosteum on the lateral surface of the body of the mandible is incised longitudinally just above the inferior mandibular margin and the bone exposed subperiosteally.

With the aid of a template, determined by orthodontic considerations, the bone is first transected posteriorly for more effective control of haemostasis. Following completion of anterior transection, the segment is removed.

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19. Dingman, R. O.—Osteotomy for the correction of mandibular malrelation of developmental origin: J. Oral Surg., 2:239-259, 1944.

Using an appropriate template, this procedure is repeated on the opposite side.

Returning to the initial side, the relationship of the anterior and posterior fragments is calculated, governed by the orthodontic requirements. Determination of the site of entry of the Kirschner wire into the anterior fragment is then made so that it enters approximately 1½ in. distal to the osteotomy site. The site and direction of entry is prepared by superficially channelling the cortical bone with a dental bur (fissure). The wire is then driven along the prepared channel, under vision, to emerge in the gutter of cortical bone beneath the dental canal. The fragments are then aligned and the Kirschner wire driven into the posterior fragment for a distance of 1½ in.

The wound is closed in layers, and a similar procedure repeated on the opposite side. Temporary compression dressings are then employed for haemostasis and the control of swelling. These dressings are removed on the third day, and the wound covered with a coating of portex or plastic skin. This, with the absence of all intra-oral and extra-oral impedimenta, is most acceptable to the patient, permitting an early resumption of social activities.

The sutures are removed on about the seventh day, and the subsequent healing results in an almost invisible scar.

SPECIAL REQUIREMENTS OF KIRSCHNER WIRE AND GUIDE:

Wire:

1. It must possess maximum rigidity in relation to flexibility.
2. It should be electrically equipotential with bone.
3. The perforating end should have an oblique cut at an angle of 45°.
4. The cutting point gauge should not be greater than the body gauge (14).
5. It should have sandblasted surfaces.

Guide:

Consists of a simple tube with a diameter just large enough to allow the wire freedom of turning. This tube is controlled by a removable T-shaped holding forceps.

If placed correctly in the mandible, the Kirschner wire cannot wander, and the slight deformity caused to the end of the wire when cut flush with the outer cortex prevents its further ingression. Unless there is special indication for its renewal, the wire is left *in situ*, but, if necessary, is readily removable through a small incision.

SUMMARY.

A technique is presented for rigid fixation of the bone fragments after bone resection in the body of the mandible for Protrusio Mandibuli, allowing temporo-mandibular joint function following operation.

AMALGAM RESTORATIONS IN THE DECIDUOUS TEETH*

O. Basil-Jones, B.D.S. (Syd.), D.D.S. (Tor.).

Introduction:

In the post-war years, a new emphasis has been given to the preventive aspect of dental and medical treatment. In applying this, it is quite evident that any effective dental health programme must deal with this problem of dental disease at its inception—early childhood.

The necessity for this work—the conservation of the deciduous teeth—has been given fuller recognition by the profession as seen by the greater allotment of time in the curriculum of the dental schools and the increased publication of text books on the subject.

Unfortunately, however, the importance of the retention of these teeth, to carry out three to twelve years' life of the mixed dentition, is not established with the general public.

Most parents, I should say, are grossly uninformed of the conditions existing in their children's mouths, changes which occur in growth and development, and reasons for the retention of the dentition until the correct period of exfoliation.

Perhaps if the importance of toxic absorption, loss of chewing efficiency and the high percentage of malocclusion, caused by the premature loss of teeth, were realised, more co-operation would be gained by the profession.

In this paper, I have nothing new of a scientific or theoretical nature to present, but it represents a summary of information based on the works of very capable men and women dealing with children over a period of many years, at the same time emphasising important steps which I am adopting in order to eliminate failures such as fractured restorations and devitalised teeth with abscess formation.

At this stage, I should like to state that there is a limitation and exception to any approach and I shall omit the mentally defective or physically handicapped child and the great problem of the very young with rampant caries or defective tooth formation. In these cases, I feel we must compromise with temporary work until a later date when the child is older and can be handled more easily.

Early Diagnosis:

Taking for granted that pre-natal advice has been given and that normal growth and development are being watched, our first question is "how soon and how often is a child to be examined?" Most operators agree that a preliminary visit to the surgery is necessary for the child to acquaint itself with the strange surroundings, this taking place in its second year. However, at this age the child is not far enough advanced to permit of interpersonal relations.

Three years begins a period of semi-dependence; the child is much more co-operative, and it should undergo proper examination for caries susceptibility.

Normal examination of the mouth, dry field and sharp explorers, mouth lamp and vitality tests, will reveal the more obvious clinical findings. However, in reference to the deciduous molars, which are our prime problem in early diagnosis, there appear to be transitional growth periods, causing opening of contacts with food fibre lodgment, leaving these areas susceptible to caries.

It is at this early period that the introduction of a supplementing bite-wing X-ray diagnosis will be of great value. Owing to the broad and flat contacts, short occluso-gingival coronal areas and high interproximal gingivae, it is impossible, without this aid, to detect clinically incipient caries. (Bite-wing

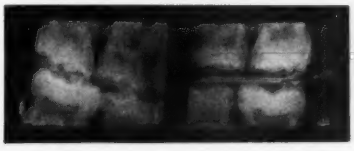

Fig. 1.

X-rays, Fig. 1—Inter-prox. Caries—No clinical evidence). If we allow caries activity to progress until the marginal ridge is broken down, we gain no operative advantage; in fact, owing to the close proximity of the pulpal tissues, infection of these has already occurred.

So with regular recall for clinical and bite-wing examination, early treatment may be provided, eliminating the problem of a child presenting with pulpitis or abscess formation in the form of a "gum-boil," the damage already beyond repair. This early treatment is a financial saving to the parent, and expels our own difficulties in later work.

*Read at the Twelfth Australian Dental Congress, Sydney, August, 1950.

SELECTION OF RESTORATIVE MATERIAL:

There are many materials available for restorations of the deciduous teeth. The choice is one that will meet the demand satisfactorily, that is, to withstand the forces of mastication from a period varying from a few months to eight to ten years.

Silver amalgam appears to be preferred at the present time. It is at the top of the list of plastic restorative materials, and, outside the cast metal inlay, has the greatest strength and meets the average person's economic field, thus reducing the cost of health service to the child.

In the past, criticism has been that it caused pulp death. However, any metallic restoration, placed in close proximity to the pulp without insulation with lining, will cause death from thermal conductivity.

For many years, copper amalgam was preferred by many operators, owing to its germicidal and adhesive properties—however, it has been pointed out that to have germicidal properties, it must be soluble, and therefore, not permanent—also, it has been shown to have a setting contraction and less crushing resistance than the silver alloy.

The use of a quick-setting alloy will be found of great advantage with children, who will not spare a restoration until it sets. In the choice of the materials, we must consider its limitations and for badly broken-down teeth and extensive restoration, we must resort to the inlay or overlay.

CAVITY PREPARATION IN RELATION TO MORPHOLOGY:

Consideration of relationship of cavity preparation to morphology and physiology for the deciduous dentition is of primary importance, and is, at times, neglected; therefore, a comparison with that of the permanent dentition may be of some help.

In outline, the anteriors are more chisel-shaped and cuspids more conical—the molars have a distinct gingival bulge and prominent mesio-distal constriction, interproximal contact not small and round, as in the permanent dentition, but large, ellipsoid and flattened.

The enamel and dentine are approximately half the thickness of that of the second dentition, the enamel of uniform thickness, knife-edged at the cemento-enamel junction; the rods at the gingival one-third do not incline apically, but incisally or occlusally.

The dentine is softer or less dense, the dentinal tubules larger. The pulps are larger in comparison with those of the permanent dentition, lying close to the surface, more so on the mesial than the distal, the mesio-buccal the most vulnerable in cavity preparation (Figs. 2 and 3).

Anomalies relatively common in the second dentition are rare in the first. However, Orban[1] has shown the presence of a "pulpal inclusion," which is an over-extension of pulpal horns to the cuspal area, just below the dentino-enamel junction.

Thus, we see that all operative procedures necessitate close impingement upon the pulpal tissues in cavity preparation.

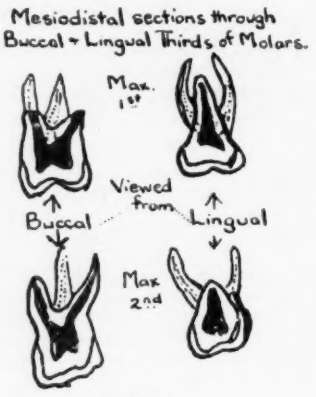

Fig. 2.

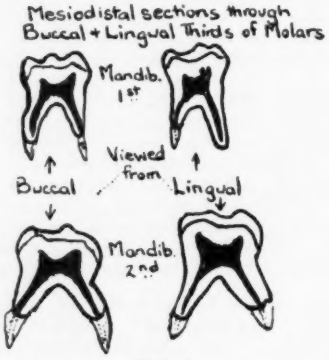

Fig. 3.

CAVITY PREPARATION:

1. *General.*

All cavity preparation naturally follows Black's principles of—

(a) Extension for prevention.

1. Orban, Balint—Oral Histology & Embryology, St. Louis, C. V. Mosby Co., 1944, pp. 244-260.

(b) Adequate resistance and retention form and removal of caries. To this must be added a thorough knowledge of the properties of the restorative material in use.

The objective of a child's restoration is the development of the cavity with the greatest efficiency, least amount of time and minimal pain.

A definite order of steps is of practical value to assure efficiency.

A general routine, with a minimal instrumentation will save time, for a child senses indecision, and a delay adds to his or her discomfort.

Concerning pain, many favour anaesthesia —however, others point out that the deciduous dentition appears to mature more rapidly and is therefore less sensitive than the permanent dentition.

With thin enamel and dentine, injury and pain from frictional and temperature changes must be avoided.

The use of sharp instruments, new burrs, a true hand-piece, low engine speed, short duration of application of burrs and stones, all tend to minimise any discomfort or injury. It is of interest to note here that it has been found that as a rule children prefer a burr to the sounds of cutting instruments with pressure.

There is a difference of opinion regarding size of burrs used. However, I find myself in agreement with the writers who support the use of a larger burr, which admittedly sets up vibration; this is more than compensated for by the short interval or duration of application, also is better controlled with less chance of the burr sinking into the soft dentine to cause pulp injury.

As a last remark, I must add that in recent years the addition of the miniature handpiece has greatly facilitated the preparation of cavities for children.

2. *Classification of Cavities with Preparation —Class I & Class V.*

I shall classify the Class I and Class V together: that is, the occlusal and gingival one-third areas. These preparations do not present a serious problem; they are similar to that of the permanent teeth, the depth proportional to the thickness of enamel and dentine.

Here again, there is variation in technique. I have been following those recommending the use of the largest round burr which fits into the cavity, and this is used at slow speed. The necessary extension is made with the aid of a No. 3 cross-cut fissure, with a No. 3 inverted cone burr to square the floor—the enamel margins are finished with a tapering carborundum or diamond stone, care being taken not to level the margins.

3. *Class III.*

For convenience, I shall next take the Class III interproximal cavity between the anterior teeth. Here, the type of cavity preparation is dependent on the space or access. If we have sufficient access, the ordinary spot cavity may be prepared with round burrs again, tapering stone to remove unsupported enamel. I have found, clinically, that the round burr will gain enough retention and thus dispense with the inverted cone, which has a tendency to cut deeper with a chance of pulp damage. When we have insufficient access, as in closely approximating anteriors, the interproximal between the cuspid and first molar, Hogeboom[2] offers a preparation (Fig. 4) with a dovetail in the lingual of the uppers or labial of the lowers, a stainless steel matrix being adapted for condensing the alloy.

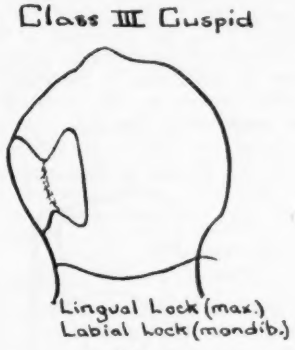

Fig. 4.

For extensive caries involving incisal angles: The general procedure for discing and tapering to provide self-cleansing area is followed by the application of silver nitrate.

4. *Class II.*

Interproximal cavity in the posterior teeth.

Without doubt, there are more operative failures in this cavity preparation than in

2. Hogeboom, F. E.—Practical Pedodontia, ed. 4, London, Henry Kimpton, 1938, p. 104.

any other for child and adult, and it is considered to be one of the most difficult procedures for young patients.

The "dovetail" preparation, without occlusal step, which depended on thin enamel walls for extension and whose extension endangered the pulp, is now considered unsatisfactory.

For convenience of description, I shall classify the two clinical types of caries—those with the marginal ridge broken down as "Advanced"; those with the ridge intact as "Early."

In the former, vitality tests are a wise precaution before commencing preparation; then removal of superficial caries will disclose proximity of pulp and reveal whether a sound gingival seat and sufficient buccal and lingual walls are intact to satisfy an amalgam restoration. Provided the above conditions are satisfactory, the cavity preparation will follow that to be described as "early caries."

Early Caries.

In the preparation of these two surface cavities, there is a division of opinion as to which part, the proximal or occlusal, should be prepared first. I find myself in agreement with those who favour the occlusal step, the reason being that it eliminates the danger, when cutting from the proximal, of the possibility of exposure by a chance movement of the patient or a slipping of the burr; also it gives better access to the proximal area. (Occlusal preparation Fig. 5.)

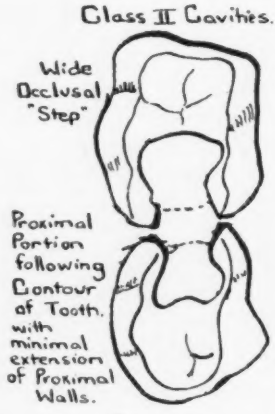
Class II Cavities.
Wide Occlusal "Step"
Proximal Portion following Contour of Tooth. with minimal extension of Proximal Walls.

Fig. 5.

The occlusal portion should be shallow and broad, with gently-rounded contours, the general contour of the floor following as nearly as possible the inclined planes of the original surface, in this way not endangering the pulpal tissues; the junction of the occlusal and proximal is made as broad as possible, as this portion is most vulnerable to fracture.

The preparation is commenced at a point on the occlusal surface away from the proximal caries. A No. 4 or No. 5 I.C. burr is sunk below the sensitive dentino-enamel junction. The burr used, held at one angle to prevent it from travelling around the tooth, is drawn towards the proximal, gradually widening the step. The walls are then squared with a No. 3 fissure burr and smoothed with a tapering pencil stone.

The preparation depends on whether first or second molar presents a step of approximately 2½ to 3 mm. broad to .5 to 1 mm. in depth. Sweet[3] states that if additional restorative material is deemed necessary, a cut is made in the central portion of the step to a limited depth not endangering the pulp horn. (Proximal Part—Fig. 6.)

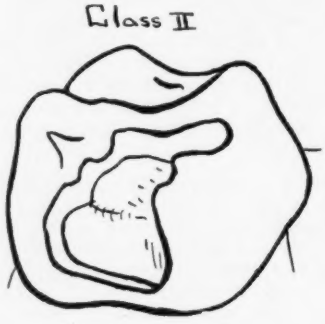

Fig. 6.

The proximal portion should be prepared so as not to be dependent on the occlusal. The depth is not great, just sufficient to be under the free margin of the high gingiva. The axial wall is uniform to the convex contour of the external surface of the tooth. A flat gingival seat is necessary and, because the cervical enamel terminates abruptly, many advise rounded bucco-cervical and linguo-cervical line angles.

A most important point, stressed by many writers, is the minimal extension of the lingual and buccal walls to immune areas; a wide

3. Sweet, Charles A.—J.A.D.A., 38:423-30, 1949.

extension reduces bulk, resistance and retention form and brings the axio-gingival angle near the pulp which is a common exposure point.

The preparation of the proximal may be commenced with a No. 2 or No. 3 I.C. burr moved bucco-lingually to sound tooth structure; then with a No. 2 or No. 3 fissure burr, the proximal is opened to the buccal and lingual embrasures.

The outline completed, the remaining caries is removed with round burs and excavators. The promixal will naturally vary considerably —however, 1 mm. as a minimum for bulk of alloy appears essential. In proximal preparation, a common mistake is to attempt to square up the bucco-gingival and linguo-gingival line angles to the depth of the caries; the caries is deepest at the central portion and this technique will readily result in exposure. The occlusal and proximal portions completed, the axio-pulpal line angle is rounded (Fig. 7).

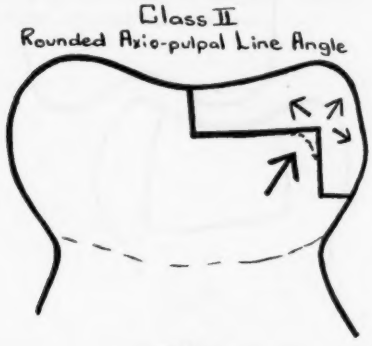

Fig. 7.

This can be quite a dangerous procedure and I find rounding with a No. 1 fissure burr, contra-angle handpiece for mesio-occlusal cavities and straight handpiece for disto-occlusal cavities will reduce the chance of instrumental exposure. This preparation completed should present no sharp angles and be designed to meet the forces of shear and tension and retard flow.

Brauer[4] suggests a modification of the proximo-occlusal preparation for two adjacent cavities at the incipient stage, where caries has not progressed beyond the dentino-enamel junction and marginal ridge is not undermined.

4. Brauer, J. C. *et al.*—Dentistry for Children, Philadelphia, The Blakiston Co., 1947, pp. 313-4.

A proximo-occlusal cavity is prepared on the distal of the first molar and the "spot filling" prepared with round and inverted cone burrs on the mesial of the second molar.

CAVITY BASES:

The preparation of the cavity completed, the tooth is isolated, the cavity sterilised by the application of phenol 95%, or a solution of silver nitrate, followed by dehydration with 70% alcohol.

Because of the larger pulps and wide tubuli, thermal protection becomes an important consideration with the almost routine insertion of a cavity base. It has been recommended that all areas of all cavities deeper than 1-1.15 mm. require a base. This will vary with the morphology of the tooth.

There are a great many cements available and I imagine that they are all serviceable to varying degrees.

Many writers prefer a zinc oxyphosphate cement with a drop of eugenol added to reduce irritation from phosphoric acid.

I have found Dalton's copper cement most adaptable with pulp irritation negligible. A thin mix is prepared and applied in droplet form on the end of a fine instrument. In this way, the cement may be teased over the required area to any thickness, eliminating excess cement on the gingival floor or walls of the cavity.

In the very deep or questionable cavities, the application of a stiff mix of zinc oxide and eugenol appears to be the generally accepted technique, the finishing of the restoration being completed at the next appointment.

THE MATRIX:

A well-adapted matrix is essential for the successful restoration. In the case of an occluso-interproximal restoration, the band must allow proper condensation of the alloy and must protect the interproximal tissues from overhanging margins. The standard adult type of matrix will not be adequate, because of size and thickness, which make application and retention of the band more difficult and painful.

Stainless steel band material 1-500th of an inch in thickness, 12 mm. wide, is available, which lends itself admirably for preparation of the matrix, the thickness allowing the band to be eased between the contacts and, with the aid of crown scissors for contouring, the bell-shaped anatomy can be copied.

The Ivory No. 8 and No. 9 may be used as retainers, applied on the buccal side for the mandible and on the lingual side for the maxilla. However, most arm retainers have to be held or lip movement may dislodge them; thus many techniques are set out to serve the purpose of joining the ends of the matrix without the aid of the retainer.

Brauer[5] gives a technique, the band being joined with a modified tinner's joint.

I am at present trying a band copied from Dr. Lovett's matrix (Fig. 8). A curved

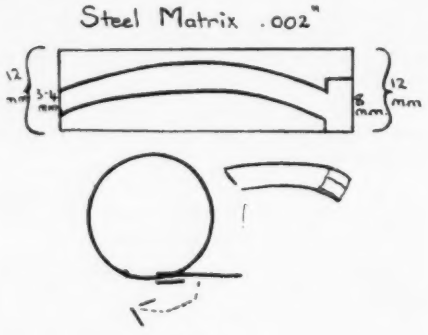

Fig. 8.

band is cut out from the 12 mm. material, the flap ends are bent in the form of an eye and the band threaded in lasso fashion. I find that, when fitted and the free end turned back, the band will stand the condensing forces and is easily removed after packing.

The band is fastened with its narrowest diameter towards the gingival and has little tendency to slip off, the shape of the crowns allowing the band to fit more securely at the gingival than occlusal.

Fine toothpricks may be used for gingival interproximal wedges, wherever the teeth permit, also for wedging. The band material for packing step type Class III cavities will help.

Many suggest that, for the smaller interproximal cavity, a well-contoured and adapted celluloid matrix will withstand the condensing pressure, this matrix being cut before withdrawal.

Another suggestion is the placing of floss silk below the gingiva for final trimming of the margin—the silk is placed in position before the matrix is applied, being withdrawn carefully buccally or lingually at the completion of the operation.

5. Idem.

MANIPULATION OF THE ALLOY:

Finally, we come to the packing and condensation of the alloy and I will mainly stress the Class II restoration.

A good plan is to have everything required on the bracket, or within reach, so that there will be no delay, as it is a strain for a small child holding the mouth open.

As a routine procedure, it is wise to check the occlusion of the opposing cusp in Class II restorations before commencing the packing; great numbers are fractured before the child leaves the surgery. The antagonising cusp

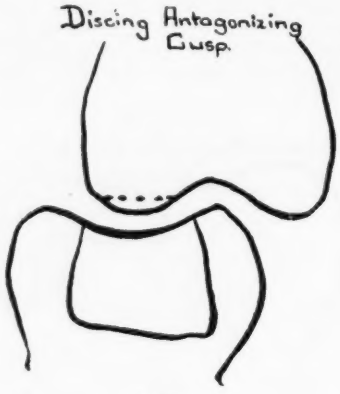

Fig. 9.

(Fig. 9) may be lightly disced or stoned to provide adequate bulk for the restoration. The manipulation of the alloy must follow the manufacturer's instructions carefully, weighing of proportions of alloy to mercury and avoiding contamination.

The help of the assistant to hold the buccal cotton rolls and the patient co-operating by holding the lingual rolls with the forefinger will help to maintain a dry operative field. for contamination with saliva at this stage will result in the ultimate failure of the restoration.

The matrix being fitted in the Class II, the alloy will be packed and condensed to about 1 mm. in excess occlusally. (Usually small packers are necessary. The Vetter & Ash 63, both double-ended packers, are most adaptable for the thin proximal portion.) After the initial set, the amalgam is carved, the

marginal ridge contoured, the occlusal carving not marked but in proportion to the bulk of restoration needed for strength.

The matrix is then held, while the wedge is removed; placing a plastic instrument on the proximal, the band is released, drawn carefully lingually and occlusally, then bucco-occlusally until removed. Great care must be taken at this stage, as lip or tongue movement may cause fracture.

The final occlusion may be checked with articulating paper.

The finishing and polishing will follow that of adult restoration—care again being observed for thermal overheating with polishing brushes.

SUMMARY AND CONCLUSION:

In conclusion, I should say that success or otherwise will primarily depend on parent co-operation, permitting early and periodic examination, in this way allowing for the elimination of incipient carious lesions, at this stage an easier procedure.

The operative success in cavity preparation in any technique, will follow the knowledge of properties and limitations of our alloy, and the morphology and physiology of the teeth.

Although the principles of cavity preparation are the same as those for the adult teeth, we must follow a general routine or procedure of instrumentation, suited to the child. It is said that a child's behaviour is proportional to our operative efficiency and technique.

Finally, I should like to apologise for the revision of so many elementary points with which you are well acquainted, especially in relation to the big problem of the occluso-interproximal restoration.

However, I feel that not one step or stage in the entire procedure is more important than another, if the desired result is to be obtained.

I think that you will agree that, although dealing with children's work, it is far from childish work.

AN OUTLINE OF THE NORWEGIAN SYSTEM OF ORTHODONTIC TREATMENT*

A. G. H. LAWES, D.D.Sc.

The Norwegian system of orthodontic treatment was originated by Viggo Andresen some 40 years ago when he was Dean of the Norwegian State Dental School at Oslo. Karl Haupl became Professor of Dental Histology at the Norwegian Dental School and worked with Andresen for 10 years, developing the Norwegian or Andresen system. In 1935 Haupl became Dean of the Dental School at Prague University where he introduced the Norwegian system. It was later adopted in other European Dental Schools and was introduced to New Zealand and to this country by Eugene Hirst, an ex-member of the Dental Faculty of the Prague University.

The principles of the Norwegian system are entirely different from those which are relied upon by the system of fixed appliances. It depends entirely on a removable appliance which Andresen called an activator, the function of which is to activate or direct into certain channels the biological forces which are always present. The various sets of muscles which are part of the masticatory apparatus are so arranged as to be complementary to one another and at rest they are in perfect equilibrium. Should any persistent disturbance of this equilibrium take place, considerable harm may result. A case in point is the persistent thumbsucker who, by means of his thumb, strongly activates certain muscles in excess of others. The normal muscular equilibrium is upset and in very many cases great deformity of the jaws results. It is important to notice, too, that the thumb is not sucked unceasingly for 24 hours per day. The worst thumbsucker would probably not operate for more than 8 hours at the very outside, and yet this very intermittent added force is sufficient to deform jaws and push teeth into malocclusion. If, then, a harmful activator in the shape of the thumb can operate in this way, then, conversely, a carefully planned and designed activator can also operate in a reverse or beneficial way and it can also function when used only for a few hours at a time, just as the thumb can.

At first glance it would seem that the use of an appliance at night only would serve no useful purpose because any movement achieved would be nullified during the day by the teeth moving back to their original positions. On this point, however, Fluhrer[1], writing in the *American Journal of Orthodontics* in January, 1950, has this to say: "Bone will and does change with intermittent pressures because the osteoclasts and osteoblasts keep working after pressure has been removed. This has been shown by Oppenheim and other investigators. The bone cells keep working for at least four days, which means that light physiologic pressures applied for twelve hours a day will create osteoclastic activity for at least four days with no further stimulation needed."

The Norwegian system sets out to make use of, to harness as it were, the natural biological forces and at the same time it strives to avoid working in opposition to these forces. When the appliance is in place, muscular contractions impart a gentle intermittent force to the teeth either individually or in groups and also, and this is important, to their surrounding tissues. This force is one to which the tissues are normally subjected during function and is physiological, although the direction of the muscle pull is changed. It should be noted, too, that no external force is imposed on the tissues because the appliance is perfectly loose and devoid of retaining hooks or clasps. It is only kept in place by the action of tongue, lips, cheek and opposing teeth. Endicott[2] claims that probably no other appliance so nearly fulfils the requirements of the advocates of functional therapy. It will be seen that muscular activity can be a factor of very great importance either in causing malocclusion, if misdirected, or in correction of malocclusion, if properly directed. It is the very essence of the Norwegian system to activate the facial and masticatory muscles so as to produce these desirable changes.

Grossman[2] quotes Oppenheim as stating that biological tooth movement means that bone resorption is not faster than tooth movement. The Norwegian appliance operates to

*Lecture delivered before the Australian Dental Association, New South Wales Branch, on May 22, 1951.

1. Fluhrer, A. Vernon—Some original investigations into pressure habits as aetiological factors in dentofacial abnormalities: Am.J.Orth., 36:37, 1950.
2. Endicott, C. L., Pedley, V. G., Grossman, W.—Functional jaw orthopaedics—a symposium by three dental surgeons: Dent. Record, 67:190, 1947.

achieve this biological movement and, as a result, it is claimed that when treatment is finished no retainers are required, the use of the appliance being simply discontinued and the case is finished. In certain cases this may be true, but in actual practice I think that when the desired result has been achieved the appliance should still be worn without further adjustment for what may be termed a retention period of about three months, after which its use can be gradually tapered off. Of course, actual tooth movement is slower than that which is achieved by means of mechanical appliances but, considering the limited period during which retention is necessary, the overall treatment is comparable.

It is further claimed that results are achieved by forces which are more biological and therefore less damaging. Grossman substantiates this claim by describing the histological changes in alveolar bone surrounding extracted teeth which were sectioned and examined.

An important characteristic of the Norwegian system is the individual approach to each particular case. Of course, it is necessary to have clearly in our minds the ideal of normal occlusion because otherwise it would be impossible to recognise the abnormal and also, if we are to speak of variations, then we must have a clear idea of the standard to which such variations can be related. Nevertheless, I think that the idea of striving to achieve the ideal normal occlusion in every case is being very much modified in more than one school of orthodontists and it is certain that the Norwegian system pays less attention to a fixed standard ideal and more attention to an optimum achievable result for each individual. The idea is not necessarily to get a perfectly ideal result but to get a result which is the best for the particular patient who is receiving treatment. The demands of mastication, speech, aesthetics and stability have to be satisfied in each case and a balanced optimum therefore is the objective at which to aim. Extraction is often resorted to in order to achieve this optimum but there are certain well-defined indications as to when extractions should be used.

One of the reasons why the Norwegian system appeals to me is that it conforms very closely to the spirit of prevention. It can be used quite successfully for very young children, even as young as three years of age. Not only can it be used to correct any malocclusion during the deciduous teeth stage but it can also operate as a corrective to harmful habits and, perhaps most important of all, it can be made to function as a guide to erupting permanent teeth. Thus, many cases of incipient malocclusion can be prevented. Treatment is not delayed till teeth are fully erupted in wrong position and then efforts made to restore them to their right position, but the appliance is used to ensure that the teeth erupt in the right position in the first place.

The importance of psychological considerations in all branches of health treatment, whether medical or dental, is becoming more widely recognised today than ever before and in the field of orthodontia, with its prolonged periods of treatment, the need for great care in avoiding psychological trauma is particularly marked. Any over-concentration on the purely physical side of treatment without any thought for the psychological side would be to render the patient a great disservice. It is important to recognise the unity of health because then it will be realised that treatment for a physical disability, for instance, malocclusion, which achieves its result only at the cost of severe mental disturbance, is really very bad treatment indeed. In my view many of the methods which have been used in the past, and no doubt are still being used, to check habits which might cause malocclusion are themselves extremely harmful to the child's mental peace and well-being. Such things as elbow bandages, and splints, thumbguards, spiky wires across the palate, and like contrivances should have no place in orthodontic treatment because in principle they are negative and frustrating and are nearly always forced on the child against his will.

The Norwegian appliance, on the other hand, is psychologically acceptable because, first of all, it is positive in action: its primary function is to achieve a desirable end, namely, correct a malocclusion, any interference with a habit being incidental; its objective is to "do", not to obstruct. Secondly, the appliance will function only with the full co-operation of the patient. In the correction of a habit it might act as a reminder to the patient, but in no sense is it forced on him against his will: if he finds himself in a situation in which he has an overwhelming desire to suck his thumb, then he can quite easily take his appliance out. This might delay the treatment of his malocclusion but it might also make the difference between a happy, contented child and an unhappy and resentful child.

Correction of malocclusion at the cost of frustration, resentfulness and unhappiness is too high a price to pay. Certain persistent habits, such as thumbsucking, are extremely

difficult to correct and it is quite certain that there is no magic wand in the shape of a Norwegian appliance or anything else which will automatically bring success. In very many cases very careful and patient psychological treatment is needed but the important point is that the appliance is at all times compatible with such treatment and often helps it considerably. Not only is tongue and lip biting and thumbsucking impossible as long as the appliance is in place, but it also helps to train the patient in sound breathing habits. This is done by encouraging the tongue to take up a position where it fills the oral cavity, thereby making it easier to breathe through the nose.

A further psychological advantage is that the appliance is perfectly comfortable and easy to use and, what is most important to many sensitive children, there are no unsightly bands because the appliance need only be worn at night. Because of this, too, and because it is removable, there is no risk of an increase in caries susceptibility.

Now before leaving what we might call the philosophical considerations associated with the Norwegian system, there are two further points, both very important, which I should like to deal with very briefly.

The question of extractions has already been mentioned and how the pendulum has gradually swung away from a rigid policy of "no extractions under any circumstances" till today there is a general acceptance by most orthodontists that in many cases extractions are a necessary part of the treatment. I don't know whether the Norwegian system uses extractions to a greater extent than other systems but certainly the extraction of carefully selected teeth at carefully selected times is an important part of the treatment of a reasonable number of cases. Whatever system of treatment is used, however, there must be some scientific reason for accepting the necessity for extractions in certain cases; and genetics supplies the probable answer in a number of cases, inasmuch as the work of Begg[3] and Stockard[4] suggests very strongly that there are separate genes for jaws and teeth. This means that in the process of heredity it is possible for an offspring to inherit the jaw characteristics of one parent and the tooth characteristics of the other parent. Carrying it a step further, it will be seen that a child might easily inherit very small jaws from its mother and very large teeth from its father. Should this occur, even in the absence of any other factors contributing to a malocclusion, then it would be impossible to accommodate all the teeth in the jaw space available and judicious extractions would have to be resorted to.

The other point is the subject of bone growth and about this there is, doubtless, plenty of room for controversy. There is no doubt, however, that every individual is born with certain inherent potentials including potential bone development. Within the limits of this inherent potential, function can be an important factor in adding to or reinforcing the bones of the skeleton, and it is claimed by certain advocates of the Norwegian system that, because of the biological forces which the appliance activates, a degree of growth promotion of the jaws results from its use. I can produce no evidence in support of this claim except to quote Russell Marsh[5], Honorary Secretary of the European Orthodontic Society, reporting the 24th Annual Congress which was held in Brussels in 1948. He says:—

"Dr. R. Grude's paper on Final Results of Orthodontic Treatment by the Norwegian System was a series of case reports and was of special interest to us all. These results and those demonstrated later were excellent and even allowing that they were selected cases it was most impressive to observe how often the maxillary apical base had really grown, an achievement which few besides Rogers of Boston can claim for many of their cases. Undoubtedly there is something of considerable importance to orthodontic science in the Andresen method."

Bjork[6], of Sweden, in a paper to be published very shortly, summarizes the advantages and the disadvantages of this system—the Andresen or Norwegian system—as follows:—

Advantages.

1. Treatment may be started early (approximately 4 years).

3. Begg, P. R.—The evolutionary reduction and degeneration of man's jaws and teeth: Proc. 10th National Congress, American Dental Association, 1939, p. 542.
4. Stockard, C. R.—The Endocrine and Genetic Basis for Differences in Form and Behaviour, Wistar Inst. Anat. and Biology, Philadelphia, 1941.
5. Marsh, L. Russell—Report, European Orth. Soc., 24th Annual Congress: Dent. Record, 68:42, 1948.
6. Bjork, Arne—The principle of the Andresen method of orthodontic treatment—a discussion based on cephalometric X-ray analysis of treated cases: Am.J.Orth., 37:437, 1951.

2. Less frequent appointments are necessary for adjustments (2 months or more).
3. Injury to the tissues is negligible.
4. No impairment of aesthetics during the day, since the appliance is used nocturnally.
5. Therapy for thumbsucking.
6. Will educate to nose breathing instead of mouth breathing.
7. Less conducive to caries incidence.

Disadvantages.

1. Impossible to use with a case that will not co-operate.
2. More selectivity of cases is necessary than with fixed appliances.
3. Age is a factor in some types of treatment which will prevent the use of the activator.
4. If crowding is of a marked degree the use of the activator is limited.

The appliance itself (Fig. 1) is a rather clumsy-looking affair which fits on the lingual of both upper and lower teeth somewhat in the nature of the old Kingsley splint. From the patient's point of view it is simplicity itself, as it is quite comfortable to wear and causes the minimum of inconvenience. From the dentist's point of view, however, diagnosis in the first instance is of the utmost importance and this, together with detailed planning of the appliance, calls for considerable knowledge and skill. The actual construction of the appliance is also difficult and exacting and calls for close attention to detail.

To start at the beginning, then, impressions should be taken in alginate or hydrocolloid and models cast in stone. Centric bite is recorded by means of a simple squash bite into some softened wax. The models are then studied in conjunction with all other information at our disposal, such as X-rays, in order to arrive at the classification and diagnosis and to decide on the design of the appliance and the plan of treatment. For instance, it is necessary to know whether or not there are any supernumerary teeth present or whether any of the as yet unerupted permanent teeth are missing, as this will have an important bearing if extractions are contemplated. Then again, depending on whether the mandible is in mesial, distal or neutral relationship to cranial anatomy will depend the decision to record a protrusive, retrusive or neutral working bite.

The amount of bite raising required must also be decided at this juncture as this, too, must be recorded when taking the working bite. In the normal rest position of the jaws there is a freeway space of about $\frac{1}{8}$ in. and unless this space is taken up by the appliance it will not work; consequently, whether or not it is desired to achieve an increase in vertical dimension, the working bite from which the appliance is to be constructed must be opened about $\frac{1}{8}$ in. The amount of protrusion which is recorded will vary from as little as 1/32 in.

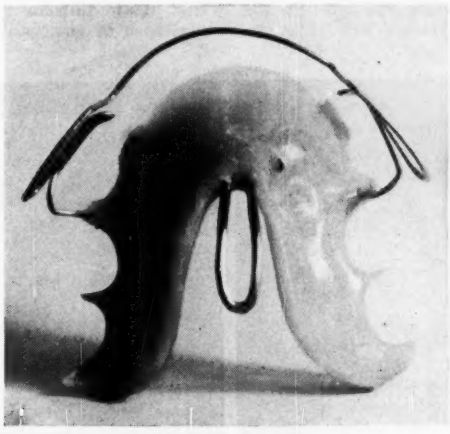

Fig. 1.

up to a limit of 3/16 in. If too much protrusive bite is recorded, the finished appliance will always be coming out during the night or the patient will fail to co-operate because the appliance is too uncomfortable to use. If properly designed and constructed, the appliance should be perfectly comfortable and easy to wear.

It will be clear that the diagnosis decides the design of the appliance, and the design of the appliance dictates the requirements of the bite taking.

The technique of bite taking calls for the adaptation of a hard base plate to the lingual surfaces of the lower teeth and gum tissues and also for its extension over the occlusal surfaces of the posterior teeth. The object of this occlusal extension is to prevent the patient biting right through when the teeth are brought together. On this hard surface of base plate is placed a strip of wax, the thickness of which depends on the amount of bite opening which is required. The wax is softened and after a few practices, preferably in front of a mirror, the patient is induced to bring the teeth into the softened wax in the desired position. The models and bite rim are then assembled into a plaster key (Fig. 2).

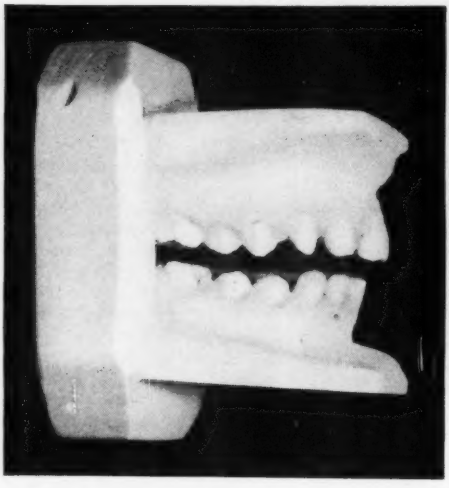

Fig. 2.

This gives a permanent record of the desired jaw relationship and during the construction of the appliance the models are repeatedly set back into this key and when the appliance is finished it is replaced on the models and checked on the key.

In a Class II Div. I case the object is to move the upper teeth backward and the lower teeth forward and, because the appliance has been made on a protrusive bite when it is inserted in the mouth and the mouth closed, it will be necessary for the patient to bring the jaw back to its normal resting position. In trying to do this, the appliance provides resistance and this resistance automatically results in a backward pressure on the upper teeth and a forward pressure on the lower teeth. If now the appliance has been properly designed and relieved to make use of these pressures, then tooth movement and bone change will take place according to the original design.

Case 16 (A.B.) is a severe Class II, the mandible being in distal relationship to cranial anatomy, and two figures are included here to demonstrate the protrusive bite which was recorded for the treatment of this case. The first shows the models in centric relationship and it will be noticed that the backs of both models are in the same plane (Fig. 3). The next illustration shows the finished appliance in position between the two models

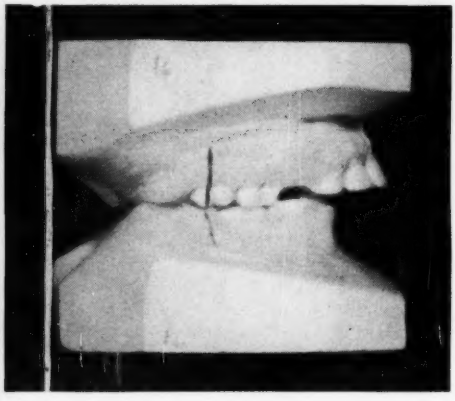

Fig. 3.

(Fig. 4). It will be noticed now that the lower model has taken up a position about 3/16 in. in protrusion and the backs of the models are no longer in the same plane because the lower model has had to come forward in order to fit into the appliance. As the natural tendency will be for the patient to be trying to bring the mandible back into

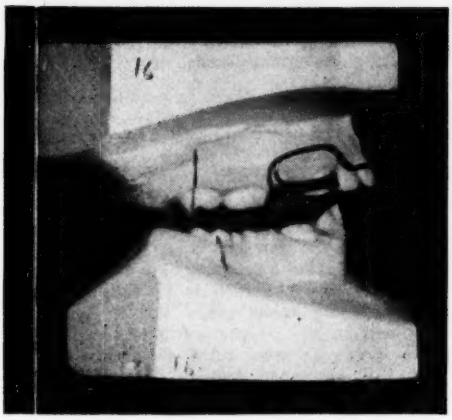

Fig. 4.

the normal resting position, it can readily be seen how this exercises backward pressure on the upper teeth and forward pressure on the lower teeth.

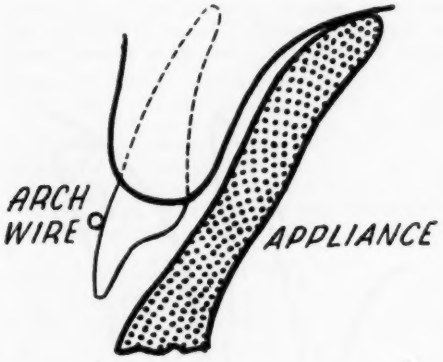

Fig. 5.

Figure 5[7] shows an upper central incisor with the appliance lying palatally to it and the arch wire touching the labial surface of the tooth. This wire has absolutely no tension of its own and merely rests against the teeth. It exercises no pressure on the teeth until the lower jaw is brought into position against the appliance and thus activates it. The appliance is relieved palatally so that it is not only free of contact of the teeth but it also stands away from the gingival tissue overlying the roots of the anterior teeth. Thus there is pressure being exerted by the arch wire, and the teeth will gradually move away from this. But even without the arch wire the teeth would still move lingually because with the appliance in this position the pressure of the lips is no longer counterbalanced by the tongue pressure lingually and the teeth will attempt to move to a position where there is equilibrium. Relieving the appliance over the tissues is also important because the extra pressure transmitted to the underlying bone through a close-fitting appliance stimulates bone change and tooth movement, and as the reverse is required in this situation the appliance is cut away.

When distal movement is desired for the posterior teeth, as would be the case for the upper posteriors in a Class II, then the acrylic is cut away from the distal surfaces of the teeth but firm contact is maintained on the mesial surfaces (Fig. 6)[7]. Pressure will

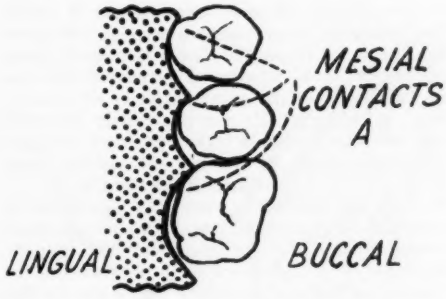

Fig. 6.

be exerted on these mesial contacts and the teeth will be free to move in a distal direction. Conversely, it is forward movement of the lower teeth which is desired in a Class II case and therefore it is the mesial contacts of the posterior teeth which are relieved and contact is maintained with the distal surfaces. An accurate fit would also be necessary on the lingual surfaces of the lower anteriors and also over the gum tissues overlying the roots of these teeth. Figure 7[7] illustrates the shape of the appliance when it is made and before any relieving has been done and also shows the method of relieving it in order to induce buccal movement of the posterior teeth. The appliance is left in accurate fit over the gingival tissues and inclined planes are cut to guide the teeth. Reliance is placed

7. Hooton, Owen G. — The Norwegian system of orthodontic treatment: Dent.J.Aust., 20:488, 1948.

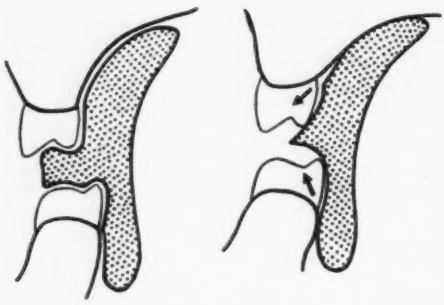

Fig. 7.

here on the eruptive force of the teeth and on their following the line of least resistance and creeping along the inclined planes provided, and also on the stimulation which the alveolar bone receives from the closely fitting appliance and the pressures which it transmits.

For a Class III case—that is, one in which the mandible is mesially placed—a retrusive bite must be recorded. There is usually some discussion as to whether a retrusive bite *can* be taken but in the great majority of cases it can. With very little practice nearly everyone can get the mandible into a position which is definitely distal to the normal resting position. It will not, of course, be very much but it will be sufficient when the appliance is inserted to exert distal pressure on all lower teeth and mesial pressure on the uppers. Instead of a maxillary arch resting on the labial surface of the upper anteriors, in this case a mandibular wire is used in order to transmit the required backward pressure to the lower anteriors. It is often very useful in such a case to use a maxillary arch wire also, but then its function is the reverse of that used in a Class II treatment. The maxillary wire in a Class III case will stand well away from the teeth and its function will be to prevent the lip from exercising any pressure on the labial surfaces of the upper anteriors. At the same time the appliance is made very close fitting on the lingual surfaces and on the gum tissues overlying the roots of the teeth. Thus there will be increased pressure on the lingual side and reduced pressure on the labial side.

The usual muscular equilibrium is deliberately upset in order to bring about a tooth movement in a desired direction. It will be clear, once again, that the appliance itself exercises no positive mechanical pressure but achieves its result by making use of or activating biological forces.

In all appliances there is usually incorporated what is known as a coffin spring situated in the centre of the palate. In the proper sense of the word this is not a spring at all for at no time is it intended to exercise positive spring pressure. It is incorporated to enable the appliance to be divided and widened as the jaws expand, thus adding to the life of the appliance. It will be seen, therefore, that the idea is to follow up the growth which takes place and to keep the appliance in the proper contact. It would be quite wrong to open out the coffin spring so that the appliance had to be sprung into place.

Adjustments.

Every six to eight weeks the patient should return in order to have the appliance adjusted. Upper and lower impressions should be taken, preferably in alginate, a squash bite is recorded and the models positioned in centric occlusion. They can now be compared with the previous models and progress noted. The appliance should be placed on the upper and lower model in turn and each tooth should be studied separately. In all probability the upper anterior teeth will have moved lingu-

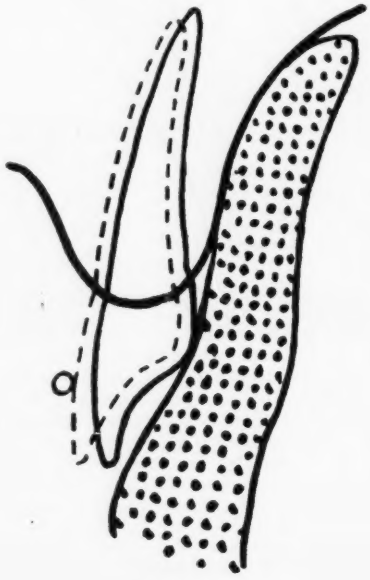

Fig. 8.

ally so that the labial arch will be out of contact with these teeth. It is possible that the teeth might also have moved lingually enough to be in contact with the appliance (Fig. 8)[7]. This calls for adjustment of the arch wire in order to bring it into contact again and it will also be necessary to cut the acrylic away on the lingual so that it is free of the lingual surfaces of the teeth.

Distal movement of the upper posterior teeth is shown in figure 9[7] and further relieving to the distal of these teeth will have to be done. It will be obvious that the amount of relieving which can be done in this direction will be strictly limited because eventually relieving the distal corners will at the same time destroy the mesial corners of the next tooth. When this happens the appliance has worked itself out and a new one will have to be constructed.

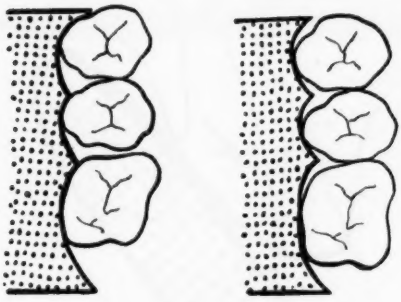

Fig. 9.

Individual tooth movements.

A frequent necessity is to open the bite in order to reduce the overbite of the anteriors, and in this situation the acrylic ledge on which the lower anteriors bite is kept very flat, thus preventing any further eruption of these teeth. At the same time the slopes guiding the bicuspids and molars are cut very steeply, thus offering a minimum of resistance to the continued eruption of these teeth. Where there is no abnormal overbite of the anteriors and bite raising is not desired, the acrylic is relieved over the roots of the teeth so as to avoid any stimulation and the slopes over the occlusal surfaces are left at a much less obtuse angle (Fig. 10)[7].

If the posteriors are in a cross bite position, the need is to expand the upper arch and reduce the lower arch and this calls for

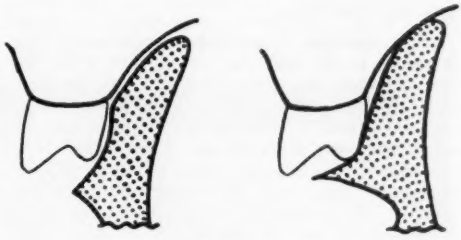

Fig. 10.

the appliance to fit very closely lingual to the upper teeth with a slope to guide the teeth buccally. On the lower arch, on the other hand, the appliance is cut well away from the teeth and tissues and there is no slope to guide the teeth buccally. Thus the teeth are still subjected to the influence of cheek pressure but are protected from tongue pressure. The result is a buccal movement of upper teeth and a lingual movement of lower teeth (Fig. 11)[7].

Fig. 11.

Mid-line correction.

If a mid-line correction is necessary—for instance, if the mid-line corresponds with the line between the upper centrals but the line between the lower centrals does not correspond—then it is necessary to bear this in mind when the working bite is recorded. If a protrusive bite is being taken, then it will be necessary not only to record the required amount of protrusion but also to have the mandible in such a position that the upper and lower mid-lines correspond. In this way the pull on the appliance will not only be in a distal and mesial direction in upper and lower jaws but in a sideways direction also. The lower jaw, in trying to move backwards and, say, to the right into a more comfortable position, exercises a distal pull on the upper teeth and also pressure on the upper teeth on the right. The opposite pressures take place in the mandible tending to move these teeth forward and to the left.

Space retainers.

A very important function which the appliance can perform is to maintain space which has been created by the early loss of deciduous teeth and also to assist in the eruption of the permanent teeth. When the appliance has incorporated in it a space maintainer for one or more missing temporary molars, this will take the form of a bar of acrylic which makes contact with the teeth at either end of the space and also rests on the gum tissue in between. Thus the teeth are prevented from drifting together and the pressure of the acrylic on the gum helps the resorption of bone overlying the permanent bicuspids. As the permanent tooth starts to erupt, care must be taken to cut away the acrylic in the right place so as to guide the tooth into its correct place. The tendency is for the first bicuspid to erupt in the middle of the space between the canine and the first permanent molar if the deciduous molars are missing. It is therefore very important for the acrylic to be cut away in such a way that when the first bicuspid starts to erupt it will be prevented from moving distally and will be guided more and more mesially till it touches the canine. The acrylic is so cut as to make use of the inclined planes of the tooth to be guided.

In a similar manner, when there is indication than an upper lateral incisor is likely to erupt in the palate, the appliance is made to cover the palate at this point. The pressure exerted by the appliance will assist the tooth to erupt but will, at the same time, prevent it erupting in the wrong position and help it to erupt in the right position (Fig. 12)[7].

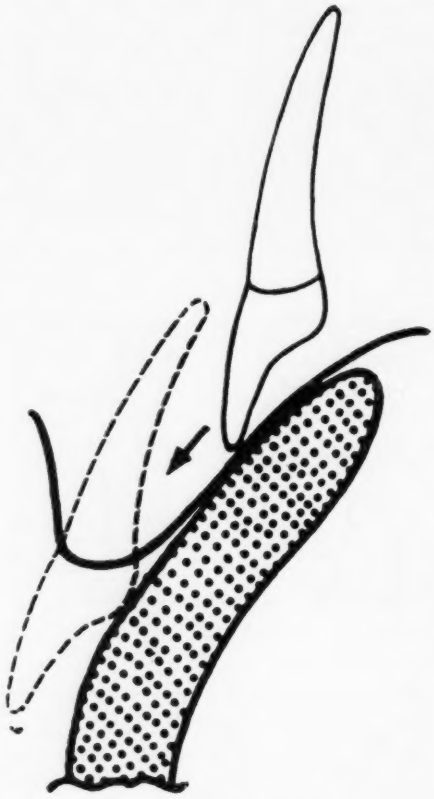

Fig. 12.

X-rays should always be taken before starting orthodontic treatment. Deformations are very often caused by missing or supernumerary teeth and, if there is the slightest doubt as to whether extractions should be carried out, always make sure that all the teeth which should be present are present.

The life of the appliance.

The length of time during which one appliance can be used varies with each individual case. If the patient is over 12 years of age, with all permanent teeth in position, the appliance will require comparatively few alterations and will remain in use for a much longer time than would be the case if the appliance were made when the deciduous teeth were in place. Obviously as these teeth are shed the appliance will no longer fit accurately and will have to be discarded. Furthermore the maximum amount of expansion

which can be expected before the appliance will have to be divided and expanded by means of the coffin spring is 3 mm. This coffin spring, it will be remembered, is really not a spring at all but is a device to enable the appliance to be split and widened to follow up expansion which has already taken place. Without it the life of the appliance would be considerably shortened.

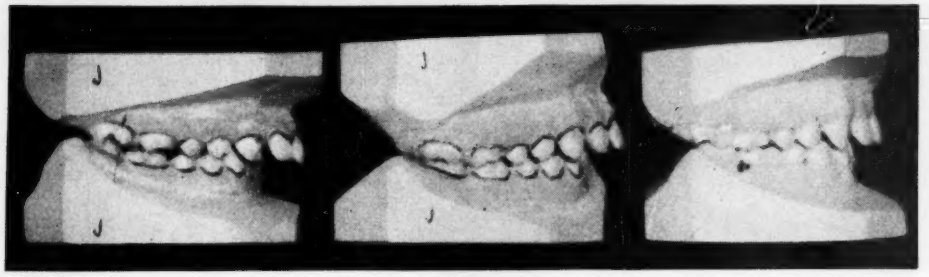

Fig. 13.

Although the forces used in this system are almost entirely biological, mechanical springs may be incorporated in the appliance when it is desired to move one or more teeth in a direction which is opposite to that of the remaining teeth. For instance, the aim might be to move all the upper teeth distally except the upper laterals which had erupted in the palate. Finger springs would then be placed behind these teeth and they would be brought forward by means of mechanical pressure.

I would now like to describe some actual cases but, before doing so, would ask you to remember that the Norwegian system is new to this country and consequently the results so far obtained are rather meagre. It would have been quite easy, of course, to have obtained models of completed cases from overseas, but I have deliberately confined myself to demonstrating cases which have been treated by myself and by Dr. Champion, of Newcastle, to whom I am indebted for his ready co-operation.

For purposes of publication two cases only are included—one of Dr. Champion's and one of my own.

Case J is a very severe Class II malocclusion. The first set of models were prepared when treatment was started in July, 1948. The next models show progress to September, 1950, a period of just over two years, whilst the third models were from impressions taken in March, 1951, or two and a half years after treatment commenced. The patient is, of course, still wearing the appliance and treatment will continue for some time yet (Fig. 13).

Penelope J. (aged 10 years in April, 1951).

This is a severe Class II with very considerable overjet. The patient at rest invariably had the lower lip folded behind the upper incisors, and there could be no question of any self-correction of this malocclusion (Figs. 14 and 15). The treatment was started in December, 1948, and the models on the right show the progress made up to March, 1951. The patient is, of course, still wearing the appliance and will be under close observation till the permanent canines and premolars are in position.

In conclusion, permit me to say that, although to my mind the Norwegian system of orthodontic treatment has very much to commend it and particularly for the general practitioner, it should not be regarded as orthodontia made easy. The appliance is certainly very easy for the patient to use, but accurate diagnosis of the case and design of the appliance are essential if success is to be achieved, to say nothing of the need for the most exacting accuracy in the construction of the appliance itself. Provided these requirements are met, I am satisfied that the Norwegian system can be a means of greatly extending the scope of orthodontic service to the community.

Acknowledgment.

Grateful acknowledgment is made to Owen G. Hooton, of New Zealand, for permission to reproduce a number of diagrams.

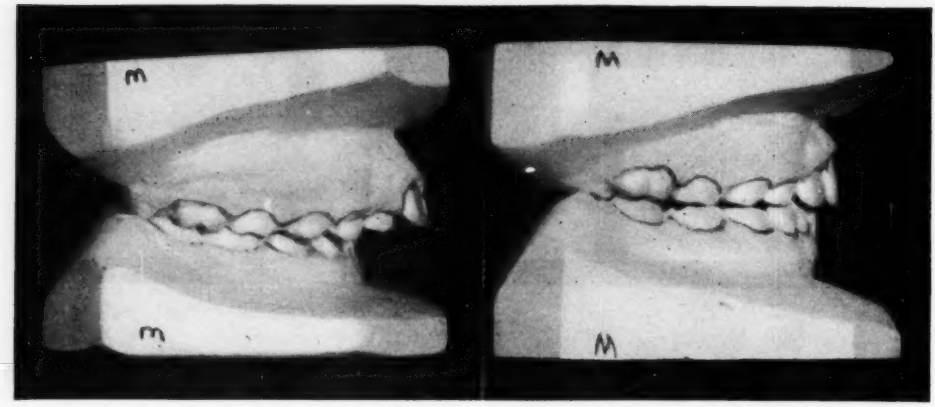

Fig. 14.

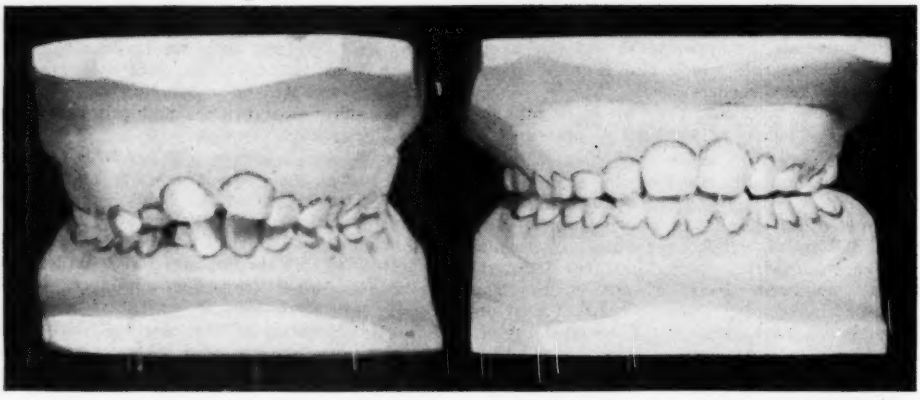

Fig. 15.

DISCUSSION.

Dr. Thornton Taylor: It is interesting that some years ago in this hall (I think it was nearer 20 than 15) it was my task to present a paper on a subject with which I was not in complete accord and which I did not understand fully, and it fell to Dr. Lawes to move a vote of thanks, and he complimented me on my willingness to appear before members and present a subject with which, as I said before, I was not completely au fait and with which apparently I did not completely agree.

Tonight the reverse may not be completely true, but it is an interesting turn of the wheel. We commend Dr. Lawes for his presentation tonight. I think he is brave. Dr. Lawes admits that he lacks a full perception and appreciation of orthodontic practice, and he is here tonight to present a subject, as a second party one may say, for he feels that it offers a sphere of usefulness in his practice, but he is modest in his claims and for that I wish to commend him most highly. That modesty, I may say, is in pleasing contrast with claims elsewhere advanced and with which some of us have had some quarrel.

Anything I may say tonight will therefore be based very largely on the material as presented by Dr. Lawes and will be given, as far as I am able, in the spirit of collaboration with a fellow colleague. However, it is my task to discuss this paper and I have been interested in some certain generalities which Dr. Lawes has presented as a prelude to his paper.

He spoke generally of biological forces and their utilisation in the Andresen appliance. All orthodontists utilise these principles in varying degrees and all orthodontists, or most orthodontists, work successfully within biological limits.

Dr. Lawes, in support of the use of this appliance and system, claimed that in most hands it would achieve "optimum achievable results." Now that, Dr. Lawes, is to me unfortunate. The phrase "optimum achievable results" is in the mumbo-jumbo of the dabbler and the theorist and one who has not a close perception of orthodontic theories and concepts, and I feel that it is a dangerous statement to make, but we know what Dr. Lawes means. I would caution people, however, against thinking along those lines. One must have a standard of idealism, but one must be careful of accepting appliances or systems which give a certain standard of results when better standards of results can with no less difficulty be achieved.

Dr. Lawes also mentioned the "histological findings of Oppenheim." Everyone, Mr. Chairman, quotes Oppenheim, no matter what their school of thought. I well remember sitting in John Mershon's office in Philadelphia and he grandiloquently had his secretary read me long extracts of Oppenheim in support of his tenets of practice, inferring that I, as a representative at that time of the Angle School, did not practise that way at all. I had just come from Oppenheim in Vienna, and I saw the pity of it, that different schools of thought should feel that other people were insensible of the histological findings of such as Oppenheim, whilst they followed them closely.

Dr. Lawes also refers to "psychological trauma," in particular reference to the appliances for restraint of thumbsucking and also, perhaps I may say quietly, in unfavourable criticism of standard fixed appliances, as being extremely harmful to the child's mental peace, but the Norwegian appliance is "psychologically acceptable." "This" (to quote him) "rather clumsy looking affair" of high co-operative demand, requiring, as I suggest a high degree of co-operation, is psychologically acceptable! But I cannot accept that statement. Many malocclusions, Dr. Lawes, are psychologically unacceptable and the sufferers of these malocclusions are glad to receive orthodontic assistance as a means to an end to make them psychologically more at ease. One feels that the sufferers of malocclusion or the patients that come to one's practice are not over-worried by the type of appliance used by the man in whom they and their parents have faith.

Now what are the capabilities of the appliance? My views of earlier claims are perhaps known to members here and it is not my intention to labour some points previously raised. However, I promised Dr. Lawes that, to remove any suggestion of bias, I would get in touch with colleagues known personally to me throughout the world, authorities in their sphere, and I would ask them of their experience and their opinions of this appliance and system, and I sent out some 18-20 letters, to which I received 12 most interesting replies. Now, 12 in the aggregate, ladies and gentlemen, is not a great number, but I want you to remember that they were from recognised world leaders and authorities, and therefore their opinions to me carried great weight and substance, and I respected them most highly.

Our Chairman tonight has given me permission, and I hope that members will accept this permission, to give you their comments at

this stage rather than more of my own, because they are experienced — they have experienced this technique much more than I, although I have seen these appliances and know something of them but they, I feel, are much nearer home and much more used to them.

It won't be my intention, Mr. Chairman and ladies and gentlemen, to give you a biography of each person—they can all be looked up if you care for them—but one perhaps can start with Selmer-Olsen of Oslo, President of the European Orthodontic Society, who wrote:

"About 12 years ago I gave a criticism of the Andresen plate. At the E.O.S. congress in London before the war I protested against the use of the national name. I always call it 'Andresen plate.' 'The Norwegian System,' as Andresen called it, includes his diagnostic method, etc."

"During about 15 years I have used the plate in hundreds and hundreds of cases in my private practice as well as in the Dental School. But I have used various kinds of other suitable appliances as well. I think, therefore, that I have got quite a good experience as to tell *pro et contra* . . ."

"In many cases the treatment by Andresen plates is very successful. In some cases (post-normal cases combined with protrusion or retrusion) I think this method is even better than others."

"We use, however, not the original Andresen plate, but a modified one," and that comes back again and again. (Andresen established a principle and men succeeding him saw something in it and modified it and used it either in certain ways or kept building and building and evolving it.)

"However, the 'plate' is very difficult from a teacher's point of view and I do think very few young colleagues are able to treat a case with success till they have made themselves familiar with the theory of it by energetic study for many years. The opinion of Andresen, that the plate should enable general practitioners to do orthodontics, *is nonsense*. Even the most enthusiastic friends of Andresen have got the same opinion as I have. For years and years I have collaborated with colleagues all over the country. It is, however, very rarely that the colleagues seem to understand what to do with the plate. It is a pity that Andresen was so blinded by his idea that he did not take notice of the difference between the two questions: What to do? and How to do it?"

Selmer-Olsen makes other comments and then, in conclusion, says: "The Andresen idea does not deny the fact that the basis of orthodontic treatment is one and only one thing: *Knowledge*. Public orthodontics is a question of how to get qualified men and not a question of fixed appliances or plates."

Lundstrom, of Oslo, says:

"I think Andresen plates are a good help in many cases who are capable of good co-operation. It cannot be used generally even under such circumstances but only in special types of cases. Some patients who seem to be good co-operators do not respond to this type of treatment even in cases which usually respond well."

De Coster, of Brussels, said in a foreword:

"There is no method of learning violins without knowing music. There cannot be a method permitting non-educated dentists to practice orthodontics."

"In cases where the patient is very docile, good results can be obtained and I have seen in 1939 very good results at the meeting in Bonn (Germany).

"Korkhaus, who had during the war a very extensive experience with the method, obtained good results but the conclusion was that the use of the method necessitated a greater experience of orthodontics than with fixed appliances and imposed upon both orthodontist and patient a greater strain than with fixed appliances."

Korkhaus (Bonn), who was referred to by De Coster, is now quoted:—

"In the beginning this system was advertised in Europe with very much propaganda and many uncontrollable sentiments, whilst exact scientific proof was lacking. Therefore at first I deemed it wise not to engage in experiments with method, especially since at the suggestion of Watry I had made a few experiments with Robin's (Paris) 'Monobloc' and unfortunately could not secure any successes therewith. However, the good results obtained by several self-critical orthodontologists (amongst them Oppenheim's pupil, Dr. Petrik, in Vienna) convinced me as early as on the occasion of the International Congress of the European Orthodontic Society in Bonn, 1939, that for a few tasks of jaw orthopaedics this method possesses some uncontested advantages, e.g., there is no doubt that it is superior to the intermaxillary rubber tractions in changes of the position of the lower jaw in the removal of anomalies of occlusions."

"You will be disappointed with regards to the stretching of the jaws and the accomplishment of singular movements of the teeth, but very satisfied in changes of the position of the lower jaw."

Schwarz, of Vienna, explained that "Austria is perhaps now the centre of Funktions-Kiefer-Orthopadie (FKO), this being our name for the Andresen system."

"I am conducting the orthodontic department of the Vienna Poliklinik, working practically only with removable appliances: in two-thirds of the cases with FKO and in one-third with my active plates.

The stock of the patients in treatment is 1000-1200. I may call myself the first that runs a really social orthodontic clinic with FKO-appliances and the active plates I have developed. This was only made possible by introducing the removable appliances in orthodontia."

"Not over 1% of my cases has for special treatments fixed appliances (Mershon-Lourie inner arch). The successes achieved by FKO in cases of mixed and permanent dentures are really 'miraculous' in the sense of the word; even the specialist is ever again astonished that with so simple means, effective only during the night, so good results can be gained which were in former times the pride of every practice as masterpieces of orthodontic skill with fixed appliances."

Endicott, formerly of the Eastman Clinic, London, also wrote most favourably:

"I am highly enthusiastic after twelve years' experience with it. Originally I attempted to do anything and everything with it. Ultimately I learned to use it only in its simplest form, that is as a modified bite plate or an elaboration of the Hawley retainer." He said: "While many of the claims for this appliance must, I think, be taken with a pinch of salt, I would say that it is much too valuable to be ignored."

Coming nearer home, Gilbert, of Christchurch, wrote:

"I have seen and heard of lots of cases where there has been pathetic disillusionment after failure—because it was thought to be a panacea and it was used blindly. On the other hand I have seen two men produce good results in a few certain cases because they had a general experience of orthodontic treatment and had the patience to learn the possibilities and limitations of the appliance by experience."

"We have had many discussions on it of course and one could fill pages with one's impressions. In 1941 I discussed it with Endicott and Grosman who were using it freely at the Eastman Clinic during the war years. (Grosman, a Czech, had worked with Haupl and was impressed with his histological findings in support of intermittent pressure to produce tooth movement.) In 1946 I discussed it with Selmer-Olsen of Oslo (who, by the way, resents it being called the Norsk or Norwegian appliance), also with Russell Logan of Edinburgh who, as a student of Korkaus, had a leaning towards it. The net result was that I didn't bother to use it. However, I think that for those who have not got fixed appliances at their service it can fill *part* of a gap that the removable appliances leave in the handling of Class II, Div. I cases, if it is used intelligently."

Dr. Gilbert made a plea for the avoidance of two terms:

"(1) *'Norsk'* or *'Norwegian'*—these terms become bandied about so glibly, even by the layman, that they sound like some trade name or patented invention. I think the term 'Andresen appliance' is far less objectionable."

"(2) *'System'*—I think the expression 'system of orthodontics' should be avoided like the plague. I know you will agree and might have the opportunity of expressing your opinion against this tendency for the term to creep into use attached to the Andresen appliance."

And assuredly, gentlemen, I do agree with these points raised by Dr. Gilbert.

Cutler, past president of the B.S.S.O., considers:

"The system demands great patient co-operation, and whilst such an appliance might produce an entirely adequate result in a selected case, that alone proves nothing, as we all recognise that there are quite a large group of cases in which stimulation, if intelligently applied, will provide a first rate result."

I personally would not use such an appliance myself, nor could I demand of the patient the degree of co-operation I feel would be necessary."

Chapman, of London, one of England's senior orthodontists and also past president of the B.S.S.O., states: "My view is that it does not take the place of fixed appliances entirely, and in my own practice only to a very slight extent."

De Villiers in Johannesburg in Africa has an open mind but he has no particular desire to use the appliance.

The Questionnaire.

Now I have suggested that I would present this questionnaire for this, in brief, gives the detailed comment of these authorities overseas and, while the numbers are small, I think it is material to the comment and it synopsizes the whole gist of probably 20 or 30 pages of correspondence, and here it is.

Enquiry re Andresen's "Norsk" Appliance.

1. Have you any experience of the Norsk "System"?
   (a) Used personally: 6 Yes, 2 No, 1 Slight.
   (b) By observation of the work of others: 5 Yes, 1 No, 3 Open.
2. Are the appliances made by the practitioner himself: 7 Yes, 2 No.
   Other agencies: 2 Yes, 1 No.
3. Do you consider the appliance useful in treatment?
   (a) Generally, yes/no: 6 No, 1 Moderately, 1 Yes, 1 Open.
   (b) In specific types, yes/no: 7 Yes, 2 Open.
   If so, what types?: Cl. II, Div. I (9); Cl. II, Div. II (2); Mandibular transposition (1).
4. Is this form of treatment more suitable for institutional treatment or private practice?: 4 Equally useful, 3 Open and Open-minded.
5. Do you consider the appliance has any particular advantage re—
   (a) Simplicity of adjustment, yes/no: 6 Yes, 1 No, 1 Doubtful.
   (b) Duration of treatment, yes/no: 6 No, 1 Doubtful, 1 Slow.
   (c) Economy of time, yes/no: 5 Yes, 1 No, 2 Doubtful.
   (d) Stability of result, yes/no: 4 Yes, 2 No, 2 Possibles.
   (e) Patient's advantage, yes/no: 4 Yes, 1 No, 1 Doubtful.
6. Can the appliance be successfully used by dentists with little or no orthodontic training? Yes/no: 1 Yes, 7 No, 1 Doubtful.
7. Would you consider its advantages (if any) outweigh its disadvantages (if any)? Yes/no: 4 Yes, 4 No, 1 Open.
8. Do you believe that the appliance induces development of basal bone? Yes/no: 5 No, 2 Yes, 1 Probably.
   If so, what proofs can be offered? Treated cases.
9. What is the consensus of opinion in general of your colleagues in regard to the claims advanced by proponents of this system? Amplified in correspondence.
10. In what proportion of cases treated with this appliance is extraction of teeth associated? Generally considered to be unrelated to the use of the appliance.
11. Would you consider co-operation of patients greater or less than those under fixed appliances? 2 Greater, 3 Less, 1 Query and 1 Open, 1 Essential, 1 Compulsory.
12. Have you any other comments?

I have chosen to close my comments with a letter from Mr. McKeag, of Belfast, immediate past president of the B.S.S.O., and an active teacher:

"It was obvious at once that for many of the purposes for which it was advocated it was grossly inefficient, but there seemed to be possibilities in its use for correcting wrong antero-posterior relationships . . ."

"To hear the advocates of the 'Norsk' system talk has given me a strong impression that they think there is some sort of magic in the working of the plates. There isn't. They are simply a means of distributing pressure to teeth, the pressure being that of muscles instead of springs or rubber . . ."

Then he says: "There is a group working in an E.N.T. Clinic in London which is experimenting with these appliances under the name of 'mono-blocs' with a different purpose. They are thinking in terms of educating the faulty muscle posture of children of 3-4 years of age. The idea is that to keep the plate in position the child has to bring the lips and tongue and jaw into the right relationship . . ."

"To summarize my personal view: I should like to have the technique of 'Norsk' plates at my finger ends, and particularly the technique of securing the co-operation of the children and training them in the use of the plates. If I had I would use it perhaps two or three times a year, where there were

special circumstances, not generally orthodontic, contra-indicating inter-maxillary traction. The one solid orthodontic virtue of the system is the freedom of the mouth from apparatus during the day."

To recapitulate the points which have been made (with which I have also agreed): the appliances are highly selective and essentially for mandibular repositioning. They demand high co-operation and must be understood and used skilfully by experienced orthodontists who perhaps do not have or who generally do not have a more efficient technique at their command.

The disadvantages of this system have been indicated in the course of this discussion and the men by and large who have not incorporated the appliance in their technique are those who can successfully treat by their own techniques and see no reason to change.

I thank you, Mr. Chairman, for the indulgence you have afforded me in discussing this paper.

Dr. Halliday: I would like to congratulate the speaker tonight on a very effective address and to compliment him on the results of treated cases.

I can see that the treatment by this method must take a great deal of ingenuity and thorough study. I personally find it much easier to put on a fixed appliance. But if Dr. Lawes can get such good results with his methods, then he is accomplishing the same thing. Of course, I think my treatment would be very much shorter than Dr. Lawes'. I have heard that this method apparently takes three to four years by the time you have finished; other methods can do it more quickly.

This whole lecture tonight has arisen mainly from an increased interest amongst members of the profession in orthodontics, and I think that this interest to a certain extent has been brought about by the realisation of a very tragic lack of basic training on the subject, thanks to our unfortunate heritage in the past. Therefore the point I want to bring out, and I don't think I am being irrelevant in this matter, is that more opportunity must be given to the undergraduate and to the graduate to acquire a fuller basic knowledge of orthodontic science.

Along these lines I am glad to say the Faculty of Dentistry here is now arranging its third post-graduate course in orthodontics, and of course Adamson in Melbourne has repeatedly stressed his now famous four maxims, i.e., that every undergraduate should be taught and practise when he graduates four things—diagnosis, aetiology, prevention and correction of simple cases by removable appliances. If they could only learn those four things, I am sure that the whole community would be better off and receive a much wider orthodontic treatment than it does today.

Thank you very much, Dr. Lawes, for your very interesting talk. I am sure it will help to stimulate further interest in orthodontic science and also help to stimulate a much wider treatment so urgently needed in the community.

Mr. Norton: I would like to take this opportunity of congratulating Dr. Lawes on his paper, and well know the amount of time he has devoted to its preparation. As we all know this question of orthodontic treatment by the Norwegian System has been hanging fire for two or three years, and I feel certain every member in this hall is very grateful for having the opportunity to hear it more fully discussed.

In making these comments I wish to state here and now two points:

(1) That I have had no clinical experience with this system of treatment; and

(2) that to the best of my knowledge I have not seen more than 15 cases treated by this method.

My only knowledge of this system has been gained from three sources:

(1) The literature which is adequate but not abundant.

(2) Discussions with Dr. Lawes and others interested in using the Norsk appliance.

(3) From correspondence with overseas operators, notably Bjork of Sweden and Sparrild of Copenhagen.

I have selected these two orthodontists because both have used this system and the Edgewise mechanism. Again, both operators have had training in Europe and the United States.

RETENTION.

When this appliance first came to my notice, claims were advanced that no retention was needed with this method of treatment. There was also the inference that this system was the only one which functioned under such happy conditions.

Dr. Lawes has approached this question rather cautiously and has left the field wide open—but it would seem that he is of the opinion that some form of retention is required.

From correspondence one is in no doubt—

(1) Bjork: "Treatment time is 1-3 years followed by use of the appliance as a retainer for some years."

(2) Sparrild: "Treatment takes a minimum of 2-3 years, and then comes retention."

The question of the length of treatment time raises a lot of problems and I have no doubt that if we started to delve too deeply into this we should probably spend the rest of the evening here discussing it, because the advocates of every method of treatment always have some statements to make on this point.

I think that Dr. Lawes would agree that the duration of the treatment times as mentioned in the literature have been a little more ambitious than would actually be found in practice. I would greatly appreciate Dr. Lawes' comments on this point, together with any observations he may care to make on the question of retention.

Speaking of retention, I would like to bring to notice that at a recent seminar in U.S.A. the profession was shown 50 cases by each of two operators, both of whom used the most mechanical appliance that is used in Orthodontics, viz., the Edgewise mechanism; these cases were taken out of active band therapy and left without any form of retention apart from that of the natural forces. All the cases that were shown (and I understand they were all of a very high calibre) were without retention for at least twelve months.

I had the opportunity of visiting Dr. Strang (who, incidentally, was one of the operators mentioned above) in 1948, and saw many of his treated cases. Most of his cases were treated upon the same lines, i.e., after band therapy no retention appliance; some of these had been finished for a period of 5 or 6 years, and those results were better than most.

The question of bone growth and the claim that the Norsk appliance can influence basal bone again arises. Now it has been unreservedly accepted over the last decade or more that the only accurate and measurable way of demonstrating alteration in the bony support of the teeth and the basal bone is by the use of a cephalometer. This then raises the question of how many cases treated by the Norsk appliance have been subject to cephalometric appraisal. In answer to my questions: "What influence can the appliance exert on basal bone? Have treated cases been cephalometrically appraised?" Bjork says: "It has been believed that there is stimulation to the mandibular growth. To my knowledge I am the only one to take cephalometric records of cases. I have concluded that it is only alveolar bone which is influenced, not basal bone."

Sparrild says: "There is little or no influence on basal bone. Do you know of an appliance which does? I know of no cephalometric appraisal of cases."

Before concluding, I would like to say this: I think that anybody who wishes to use the appliance should fulfil certain requirements, and I have jotted these down. First of all, they should have a basic knowledge of orthodontic science. Secondly, they should have a training in growth and development of the jaws and be a student of dentition development. I think this is particularly important as Dr. Lawes points out that this appliance can be used to guide teeth into their correct location. As to whether that is correct or not, I am not prepared to say—I would like to have some clinical proof. Thirdly, they need a sound knowledge of case diagnosis; they should know what is required as to tooth and jaw movements and what is the variation from normal. Fourthly, they should know something of the appliance: how it functions and why it functions. Fifthly, they should know how to apply, to construct, and to control the appliance. You will probably see that immediately raises the question of where is such training available. Lastly, they should know the full effect of muscular pressures on the dentition.

Dr. Rowell: I would like to comment on some of the statements of Dr. Taylor.

It was most interesting listening to the comments of overseas orthodontic specialists as to the success or otherwise of this so-called system or method of orthodontic treatment. Interesting as they were, I would be far more convinced if Dr. Taylor had been able to say: "I have treated 100 cases in Australia by this method. I have had 80% failure and 20% success or vice versa." I would be infinitely more convinced because, from what I can understand, and I am open to correction here, the orthodontists in Australia have not practised this method sufficiently to give a definite statement of their own experience as to the value or otherwise of this type of appliance. Nor am I convinced that in the hands of the average practitioner this system could be of much use without specialised training.

I was fortunate, along with Dr. Lawes, to attend two classes which were run in Sydney, one this year, the other about three years ago by Mr. Hirst, who introduced the system to this country. I was particularly interested in the results which he demonstrated and also in the fact that he claimed that this was not the complete cure for all orthodontic ills. He claimed that it did place in the hands of the general practitioner who was sufficiently interested to learn something about it—and it is a study—a method of achieving results with the possibility of doing perhaps less damage than if he were to meddle with the conventional fixed orthodontic appliances.

I am afraid that when we get into discussions in this hall too often we limit our experience to the metropolis and its environs, forgetting about the country practitioner who has a number of child patients growing up with dental anomalies developing and no way of correcting them because he feels that his orthodontic knowledge is insufficient to allow him to cope with the demand. I feel that, were he to apply himself to learn what material is available about this system, he could use it to prevent anomalies in the dental arch and to correct in some measure some which have developed, realising, of course, the limitations inherent to this system.

I would like to compliment Dr. Lawes on his presentation of the paper, on the fact that he has presented local material, and on the results obtained under Australian conditions. I am sure that he realises the difficulties in the construction of the appliance. Whereas the actual construction of the basic appliance is simple and can be done by any competent technician working to instructions of a trained dentist, the actual adjustment of the basic appliance by the dentist to make it a functional or functioning appliance is a very delicate and difficult task. That task having been completed, I then feel that the appliance, with a minimum of time and expenditure by the dentist and by the patient, can successfully function.

I have personally tried several of these cases, and they have given me very pleasing results. My own limited personal experience has indicated to me that it is a system which can be used by a practitioner who is prepared to study and learn the system, particularly if that person feels that he is not sufficiently experienced to undertake more specialised orthodontic treatment.

I wish to thank Dr. Lawes for the presentation of his paper, and for being sufficiently courageous to do so, as it takes a great deal of fortitude to stand before this critical audience and, as a general practitioner, to deliver a paper on a specialist theme in the presence of a number of specialists. He has put himself right into the lion's mouth from the point of view of criticism; but I think his object has been achieved and the presentation of his paper has been excellent.

Dr. Lawes: Thank you for the kind reference which you have made to my humble efforts. I appreciate the comments most of all on my courage because I came here feeling like a rabbit who is facing a barrage of 18-pounders. However, I am still here and I think it has been a worthwhile evening.

In reply I can select only a few points.

I cannot possibly comment on all that Dr. Taylor has said to you but he did join issue with me on my criticism of the psychological effects of certain methods of treatment which have been used in the past. He said he could not accept those criticisms. Well, now, all I can say is that that comment on the psychological angle was carefully considered on my part but you don't have to accept that as an opinion any more than you have to accept Dr. Taylor's opinion. What counts is not personal opinions but the evidence that is available to support every statement, and I would suggest that there is a considerable amount of evidence available in support of the harmful psychological effects and frustrations which can result from the measures which I have criticised. I have endeavoured to present some of these in a paper which appeared in the April, May and June, 1950, issues of the *Dental Journal of Australia*. For those who are interested there is evidence there from eminent authorities in the field of psychology and also quite a lot of clinical evidence of my own.

Now Dr. Taylor mentioned the necessity (he quoted the name of one of the gentlemen from overseas) of knowing what to do and how to do it. I agree entirely. There is no question of that. Obviously this is not orthodontia made easy, so that you can just put a couple of models into one end of the machine and receive the finished case out of the other. That just won't do any more than in any other branch of dental science can you do that sort of thing. Obviously it needs study and it needs application and to know what you are about, and I have tried to stress the need for diagnosis in the first instance. Without some fundamental knowledge to start with you cannot diagnose a case, obviously. Without diagnosis you cannot get a thing done—you won't

be able to use the appliance. These things, I think, go without saying but that doesn't mean that because people haven't had a lot of experience in this form of treatment that they mustn't touch it. Where are you going to start? Somebody has got to start somewhere. Perhaps I have been foolish enough to try and start myself! But the point is that not much harm can be done through lack of experience in this system. I think that is important—that you can feel your way—for this is a system which is slow, which is gentle, and which won't do, as far as I can see, much harm in comparatively inexperienced hands. On the other hand, I think that I could get into an awful lot of harm and trouble if I tried now to use fixed appliances with which I have had no experience.

I think the Norwegian system has a great application for the general practitioner because, to put it simply, I don't think that the use of fixed appliances fits easily within the confines of a general practice. I may be wrong. That might be a personal opinion but I do think that a lot of men who would not undertake treatment by means of fixed appliances, because of the very fact that such treatment does not fit conveniently within general practice, would find that the Norwegian method of treatment does lend itself particularly well for use in general practice. I think it can be run and carried on side by side with the other branches of dental practice. I think that Dr. Rowell also mentioned an extremely important point and that is—that there are thousands of children, particularly in the country and in inaccessible areas, that simply cannot, even if their parents could afford it, obtain treatment by fixed appliances.

Consequently if the number of people who are to receive scientifically based orthodontic treatment is to be enlarged then we must find ways of doing it and I think that the Norwegian or Andresen method of treatment is at least part of the answer. It seems to me that the first question to be answered with reference to this method is—is it scientifically based? And I believe it is. Now I don't want to use a lot of quotations but it seems to me that I have had a lot of quotations fired at me and I, in self-defence, feel entitled to quote too. I am sure that I have the permission of this authority to read the extract from his letter.

Mr. H. D. Bliss, Principal Dental Officer (Orthodontics) of the Division of Dental Hygiene, New Zealand Department of Health, in a recent letter to me, had this to say:—

"It may be seen that the principles are entirely sound from the orthodontic point of view, unquestionably, and that they are as easily accepted as they are understood but it is the interpretation of these principles into clinical methods which requires close attention. In this way the Andresen appliance is like any other, even the universal Edgewise appliance; it is no better than the orthodontist using it. In my opinion the system offers no easy or royal road to the treatment of malocclusion. Futhermore, although in appearance the appliance is clumsy, the technique of making it is exacting, as consistent accuracy in every detail is essential. As with other orthodontic treatment, success lies in the diagnosis rather than in the appliance."

There is the safeguard that it is relatively slow, that it is gentle, and that it is much safer in the hands of the general practitioner who has a limited experience. The only other quotation I want to make to you is one that comes from Jackson in the *American Journal of Orthodontics*, February, 1950. Speaking of removable appliances in general, he says:—

"In Europe, where economic and orthodontic standards are totally different from those in our own favoured land (America), simpler methods are mandatory and many very satisfactory results are being obtained by the use of easily constructed removable appliances in which the functional force of occlusion is utilized to the greatest possible advantage. This is a form of mechanical therapy in which it might be well for American orthodontists to take a far greater interest. Far from feeling that these simpler methods are outmoded, it is the opinion of European orthodontists in general that it is some of the intricate, complicated American techniques which are basically ill-conceived and have become outdated."

There it is. I leave it to you.

Now, Mr. Norton. I don't think there is any comment that I can make, except this—Mr. Norton raised the question of the retention. I don't know about that. The advocates of the Andresen method claim that they don't need any retention when the case is finished. And I think that if the appliance was skilfully designed and properly used then, in the ideal, I think that there would be no need for retention. I did have a lad of about 18 who used the appliance for about two years and just came in one day and said: "I am sick of this," he would not use it any more. That is one particular weakness of the system. He was no longer willing to co-operate. After giving

up the use of the appliance his malocclusion definitely got worse in the ensuing six months. On the other hand, I have seen other cases where they discontinued their treatment for six months or so, and there was no change whatsoever, so I have got a perfectly open mind on the question of retention. I cannot answer that with any finality.

Mr. Norton's various points which he has set down mean that whoever uses this system must understand what he is about and I agree with that. Finally, let me say this, Mr. President, if I may, to me it simplifies itself down to this: Is the system based on sound scientific principles? If it is not, then the thing finishes there; we have nothing further to do with it, but if it is based on sound scientific principles, will it, in the practical application of these principles, operate to the benefit of those suffering from the various forms of malocclusion?

I believe that the weight of evidence overwhelmingly is in favour of answering yes to both questions, and that being so, study and growing experience will greatly improve the standard of service which can be rendered, and it is reasonable to hope, too, that many children who are at present completely without hope of ever having orthodontic treatment will in future be able to have it. If that can happen, then I think it is a good thing.

I don't think there is any other comment, except to say that on the score of co-operation great stress was made by somebody (I have forgotten by whom) on the point that it was very difficult to obtain co-operation from the patient. That is entirely contrary to my experience, with one or two exceptions—the boy that I have just told you about was one, but with that exception the rest of the children seem to take to it quite readily. There is no difficulty about it at all. It is not uncomfortable. It is perfectly comfortable and easy to use, and from my own experience and that of others with whom I have discussed it, that is not a very difficult problem.

I must repeat again that there are many men who would not feel themselves ready to undertake treatment with fixed appliances but who could, over a somewhat longer period perhaps, get satisfactory results with this Andresen appliance, and I think that is a good thing.

DENTAL HEALTH EDUCATION DEPARTMENT

The Dental Health Education Department will publish in each issue of the *Dental Journal of Australia* articles pertaining to dental health, for the information of the profession and also for dissemination to patients, to publicise and popularise new methods and treatments and create an awareness of the importance of oral hygiene.

These articles will be available in the form of reprints if the demand from the profession warrants such action.

A limited number of reprints of the article in this issue of the Journal will be available upon application to the Office of the Association and, thereafter, members requiring reprints of articles to be prepared under the following titles by members of the Dental Health Committee are asked to order them in advance:

Prevention—Patient, Dentist, Toothbrush.

The Primary Dentition.

The Importance of X-rays in Preventive Dentistry.

TOPICAL SODIUM FLUORIDE APPLICATION*

The use of sodium fluoride topically applied to the teeth is the most effective local treatment to prevent dental decay yet found.

Since this measure was first used in 1942 it has been the subject of constant research and in 1950, after eight years of investigation, scientific evidence had been presented which showed that 15,000 children whose teeth had been treated with sodium fluoride solution showed a reduction of 40% in new dental decay.

The general acceptance of this treatment in the United States can be seen from this statement which appeared in the *Journal of the American Dental Association.*[1]

"Since the nation-wide topical fluoride demonstration programme launched by the U.S. Public Health Service in 1948, demonstrations under the supervision of state health departments have been conducted by its demonstration teams in 658 communities with the co-operation of state dental societies and community organizations. The demonstrations show how a 2 per cent. solution of sodium fluoride should be applied to the teeth of children to effect a 40 per cent reduction in new dental decay and how community programmes might operate on a mass treatment basis.

Two hundred and eighty-five communities in 30 states and the District of Columbia have established topical fluoride programmes.

The standard technique to be followed if the maximum protection is to be obtained is that recommended by Knutson. The patient must receive a dental prophylaxis using a motor-driven rubber polishing cup and pumice before the application of the fluoride solution is made to the teeth.

The teeth of one quadrant of the mouth are isolated with cotton rolls, a procedure which must be carefully carried out in order to block the flow of saliva onto the teeth and also the rolls must be retained so that the solution is not absorbed by them.

Then the teeth to be treated are dried with compressed air.

The solution, 2% sodium fluoride, is swabbed on the teeth and the teeth completely wet with the solution and then allowed to dry in air for four (4) minutes. This procedure is repeated for each quadrant of the mouth. The treatment is carried out at weekly intervals for one month (i.e., four treatments).

It is further recommended that this series of prophylaxis and four topical applications should be commenced at the age of three (3) years and repeated at the ages of 7, 10 and 13 years, in order to provide protection for all the teeth as they erupt.

The following statement by J. W. Knutson of the United States Public Health Service is a pertinent comment on the status of topical fluoride application in our community.

"In spite of the excellent laboratory evidence and the large volume of well-controlled clinical experience supporting the conclusion that topical fluorides are effective in reducing dental caries incidence by approximately 40 per cent., there are still many dentists who doubt the value of topical fluorides and who feel that this method is still in the experimental stages. This is understandable. It takes time, usually a generation, for a new concept to be fully accepted. More important is the fact that far too many of those who have accepted topical fluorides and who are using them are not using them correctly and are thereby reducing their effectiveness."[2]

*Contribution from the Dental Health Education Department, Australian Dental Association, New South Wales Branch.

1. J.A.D.A. 41: 486, Oct., 1950.

2. Knutson, J. W., Penn.D.J., p. 130, May, 1951.

DENTAL MATERIALS

CURRENT NOTES (No. 8).*

Resilient Polyvinyl Denture Lining.

Patients are occasionally encountered who for one reason or another seem to find it impossible to tolerate or to retain successfully the hard type of lower denture base. Extremely flabby ridges, certain other forms of ridges, or the almost complete absence of a ridge are possible examples. In special cases a denture with a resilient lining may be indicated, and in such circumstances plasticised polyvinyl resin is the most convenient material to use. Earlier attempts to use these resins failed, chiefly for three reasons—detachment of lining from the acrylic base, hardening of the lining, and deterioration of shade. The first disability has been overcome by the use of an intermediate layer of acrylic syrup and the second by the replacement of the formerly used plasticiser, dibutyl phthalate, by the less volatile and less soluble dioctyl phthalate. Unfortunately colour stability is not yet perfected but the lining is of course not in evidence while being worn.

Since Mr. Leigh Jones demonstrated at an A.D.A. Victorian Branch meeting last year the technique for processing polyvinyl chloride denture linings, a number of requests have been received at the Bureau of Dental Standards for further details or technical assistance. It was felt that an outline of the process would be of value to the profession generally even though the cases where a resilient liner is indicated in place of acrylic resin are comparatively rare.

If further information about the materials and processing is required, please contact the Commonwealth Bureau of Dental Standards.

Materials: The available material found most successful, both clinically and from tests at the Bureau, is an I.C.I. polyvinyl chloride resin known as Corvic PM. Experimental samples of a specially blended form of this material were kindly supplied by the Imperial Chemical Industries of Australia and New Zealand Ltd., together with the dioctyl phthalate plasticiser.

To use these materials it is essential to cure at 160°C. (320°F.) and for this the artificial stone in the flask must be thoroughly dried. The use of an oven at 160°C. may present some difficulty although there are dry heat sterilisers which could be suitably maintained at this temperature.

Processing: To ensure success the following technique as outlined by Mr. Jones *must be followed in every detail.*

1. Inspect margin of processed acrylic denture in mouth.
2. Run model in stone.
3. Articulate denture to key, set articulation.
4. Cut denture base according to ridge, roughen denture surface.
5. Replace on articulator, and wax up.
6. Invest in stone in lower half of flask to periphery of denture, ensuring sharp margins.
7. *Tinfoil all surfaces.*
8. Complete investing, heat and eliminate wax.
9. Tinfoil surface of model and *all* other areas of stone.
10. *Remove lid, dry thoroughly,* preferably in an oven 60°C. (140°F.).
11. Half hour before packing coat denture surface with acrylic syrup or a sloppy acrylic cement mix (using excess of monomer).
12. Ten minutes before packing mix polyvinyl chloride powder (2 volumes) with liquid (1 volume). Prepare about twice as much as seems necessary.
13. Place beaker in boiling water, stirring all the time. When mix reaches a *smooth dough* dispense into cellophane with stainless steel or agate spatula; *don't touch with fingers;* place material in flask and close. Surplus of material must be used as *the case cannot be tried.*
14. Remove lid of flask, place in clamp, process at 160°C. (320°F.) for two hours in an oven.
15. After bench cooling, remove the denture from flask, trim any excess with scissors, razor blade, or rubber stone.

*Contribution from the Commonwealth Bureau of Dental Standards.

The DENTAL JOURNAL of AUSTRALIA

EDITORIAL DEPARTMENT

AGAINST THE TIDE

There was a time when a dentist could work for some security in old age. He could look forward to retiring after forty years of hard work to a modest annuity and a few years in which to do the things he always wanted to do, largely denied him by a sense of community service that gave little leisure.

The outlook for professional people is now different unless they inherit capital or become successful in the pursuit of astronomical dividends, a calling for which they are not basically trained. Many have no great ambition for wealth, they are more interested in their profession *per se* and in the refinements of living. Nevertheless, all must work these days for their practice expenses and living costs. In particular are dentists affected because they are dependent upon others. Maybe the time will come when money will be extracted faster than one can earn it. The professions have not benefited overnight by a fortuitous increase in the value of goods possessed and which are so happily influenced by the law of supply and demand. Rather are they in the position of attending to many worthy patients who, like themselves, are distinguished in the social sense by the modesty of their car and an absence from the passenger lists of overseas ships.

However, having earned the ever-increasing costs of practice (including charges by plumbers, electricians, painters and telephone departments whose hourly rates of pay create envy, if not indignation), one is taxed upon the balance of income and allowed to purchase with the remainder half of what one might expect. In the paying for such essentials as food, clothes and school fees one is conscious of becoming further and further removed from an independent and dignified old age in which man could have time to explore and reflect upon some of the fine works and scholarship of his predecessors. This concept is of course old fashioned, if not naive, in an age of materialism.

CONTEMPORARY THOUGHT

For any dentist who may believe the slightest stiffness in a joint is not only a signal but a justification for the fully edentulous state, an article by W. Graham, of the University of Toronto, should be a warning—"dentist, stay thy hand!" Dr. Graham's opinions, Focal Infection and the Rheumatic Diseases appeared in the *International Dental Journal*, Vol. 1, No. 4, June, 1951. The author gives a clear statement upon differential diagnosis, those arthritic conditions possibly related to focal sepsis and those obviously of no kinship. This is the type of trained thinking one welcomes in dental literature and it is suggested for a full study. Speaking of focal sepsis, the author states: "After reviewing the unfortunate results of the application of this theory (i.e., Focal Infection), in the rheumatic diseases over a period of forty years, it is astonishing that it still leads to the wholesale removal of teeth and tonsils as a 'cure' for many forms of rheumatism." One must, of course, read the article because the author does advise the removal of focal sepsis when present.

Partial denture prosthesis—modern trends.

For a long time Professor Walter H. Wright, Dean of the New York University College of Dentistry, has given ample evidence of a first-class brain. In his article, "Partial Denture Prosthesis—a Preventive Oral Health Service," J.A.D.A., August, 1951, he not only maintains his high scholastic outlook in regard to prosthetic dentistry but what is more important has the moral courage to defend a principle. Those who believe moral and professional principles in dentistry are worth fighting for, as distinct from compromising upon, in the interests of political expediency, will find in Professor Wright's article not only a tonic for the soul but much to satisfy the higher discriminations of thought. Obviously with much concern Wright records the trends towards deterioration in the status of prosthetic dentistry. He emphasises with clear strokes of the pen the basic biological and physiological nature of a prosthetic health service in which the actual construction of a partial denture is merely incidental. Members of the dental profession will find in this scholarly and yet realistic article much with which to strengthen any indecisive attitude upon the status of prosthetic dentistry as a professional subject.

Professor Wright states: "Today there are subversive influences both within and without the dental profession which tend to degrade the quality of partial denture service to the public."

Only the profession can find reasons for agreeing with this challenge.

Not so contemporary.

Articles in the classical tradition of validity, clarity and scholastic finesse, like a good vintage improve with age. They become a standard by which current opinions may be assessed in terms of acceptance or rejection. Such an article was written by Sir Norman G. Bennett in the *British Dental Journal* of 1924 and the title was "Movements of the Mandible in Relation to Prosthetics." It is good to read again that which was written a quarter of a century ago and to pay but a fleeting tribute of respect to a fine contribution of the past. To wonder if today the standard of our professional thought merits the recognition of posterity is a natural sequence.

Correspondence

TOOTH REPLANTATION

Sir,

Following the report of tooth replantation by Dr. Freeman (D.J.A., Vol. 23, p. 313), I would like to present a case of similar interest. Mr. E.P., aged 26 years, presented complaining of looseness of the upper left canine which occurred after biting on food two days before.

Clinical examination revealed some exposure of the neck of the tooth on the labial aspect and a large metallic filling in a distal cavity. The degree of mobility suggested that the crown may have been fractured.

On being questioned, the patient said that he had attended a dentist in England some five years ago when the tooth became infected.

Fig. 1.

Fig. 2.

It was extracted, root-filled and replanted within a few minutes, no attempt being made to support it with splint or ligature. He was told that the tooth would cause no further trouble.

Radiogram (Fig. 1) shows almost complete resorption of the root, leaving the root canal filling surrounded by a fibrous socket.

Extraction was easily performed with forceps, and examination of the "tooth" shows (Fig. 2) complete resorption of the cementum and almost complete destruction of the radical dentine, leaving the major part of the root filling exposed.

Yours faithfully,

T. R. CORBETT,
Assistant Superintendent.

United Dental Hospital of Sydney,
Chalmers Street, Sydney.
October 3, 1951.

News and Notes

EASTERN SUBURBS DENTAL GROUP

The Eastern Suburbs Dental Group held its Annual Meeting at the Oceanic Hotel, Coogee, on Monday, 27th August, 1951.

The following were elected to the Executive:—

President: Mr. George Baulman.
Immediate Past President: Mr. L. Cooke (ex officio).
Vice-Presidents: Mr. T. Royse-Smith; Mr. J. Ingram Moore.
Hon. Secretary: Mr. T. Ginty. (Phone: FX 6688.)
Assistant Hon. Secretary: Mr. J. B. Fox.
Hon Treasurer: Mr. H. E. Morphew.
Committee: Drs. Ellice Weir and J. V. Fletcher; Messrs. T. R. Corbett, C. Holmes, K. Lowry and C. Sharpe.

NORTHERN SUBURBS DENTAL GROUP

The following office-bearers and committee were elected for the ensuing year at the Annual General Meeting of this Group on 26th July, 1951:—

President: Mr. L. J. Noone.
Vice-President: Mr. A. S. Henderson.
Hon. Secretary: Mr. J. E. Spencer.
Hon. Treasurer: Mr. N. G. Moore.
Committee: Mr. A. V. Barnett, Dr. L. G. Crane, Mr. J. A. Hayes, Mr. L. S. McKern, Dr. R. Moore, Mr. F. H. Thearle, Mr. R. Tompson.

WESTERN SUBURBS DENTAL GROUP

At the Annual General Meeting of this Group held on 19th July, 1951, the following office-bearers and committee were elected for the year 1951-52:—

President: Mr. F. Dennett.
Vice-Presidents: Mr. R. Y. Norton, Mr. H. C. Osborne.
Immediate Past President: Mr. R. G. Leeder.
Hon. Secretary: Mr. R. C. Dennett.
Hon. Treasurer: Mr. D. J. Steele.
Committee: Dr. R. M. Cloutier, Mr. H. Hawthorne, Mr. L. G. Kluver, Mr. B. W. Maundrell, Mr. H. W. Sengelman.

UNITED DENTAL HOSPITAL OF SYDNEY

Department of Preventive Dentistry.

Applications are invited for the position of Head of the Department of Preventive Dentistry. Applicants should give full details of their scholastic, academic and professional careers and attainments. Qualifications must include a degree in dentistry. The names of two persons willing to act as referees should also be submitted. Salary is at the rate of £1,700 per annum, with the right to contribute to the State Superannuation Fund. Applications close on Thursday, 31st January, 1952.

E. B. WALLACE, Secretary.
United Dental Hospital of Sydney,
2 Chalmers Street, Sydney.

SPORTS AND SOCIAL COMMITTEE

The Australian Dental Association, Queensland Branch, has accepted our invitation to send a team to Sydney to play golf, bowls and cricket during the week commencing 25th February, 1952.

The dates of these matches are as follows:—
Cricket, 27th February.
Golf & Bowls, 28th February.

All members interested in participating in any or all of these sporting activities are asked to notify the Secretary.

FLAVELLE CUP

The following are the results of the Flavelle Cup which was held at Concord on 18th October, 1951, and in which event 150 golfers and bowlers took part:

Flavelle Cup: J. S. Crawford—1 up, won on count back.
Runner-up: A. S. Burgess—1 up.
Best scratch score: E. S. King—8 down.
Country trophy: E. McGovern—4 down.
Handicaps:
12 and under: I. Steele—1 down.
13 to 15: A. Binns—square.
16 to 18: M. J. Lloyd—2 down.
4 *Ball Best Ball*:
W. A. Grainger and A. Burgess—7 up, won on count back.
Runners-up:
J. S. Crawford and A. Binns—7 up.
Bowls: F. R. Reid, A. French, N. Taylor and J. L. Gibbs.

WANTED TO PURCHASE

Operating stool in good condition. Apply Dr. A. W. Rourke, 175 Macquarie Street, Sydney.

FOR SALE

Vacant possession of modern residence and surgery in an excellent location near prominent North Shore Junction.

Formerly owned and occupied by a doctor, the offering of this outstanding property is an opportunity not to be missed. For further details and appointments to inspect, ring L. J. Hooker Limited, BW 8401.

High-fusing porcelain outfit. Apply Dr. A. W. Rourke, 175 Macquarie Street, Sydney.

Association Activities

AUSTRALIAN DENTAL ASSOCIATION
FEDERAL NEWSLETTER No. 4

A meeting of the Federal Executive was held on Saturday, 21st July, 1951, and the salient features of the business transacted may be summarised in the following form:

Membership of Federation Dentaire Internationale.

The Honorary Treasurer of the Federation Dentaire Internationale having notified the Federal Office that the annual subscription would be £50 (Aust.), it was resolved to apply formally for membership in terms of the minute of the last Annual Meeting and express our appreciation.

Pharmaceutical Benefits Act.

As the time is now more appropriate, a further application will be made to the Minister for Health for recognition of dental requirements under the Pharmaceutical Benefits Act, requesting a licence to prescribe antibiotic drugs and asking that a regulation be so framed that additional drugs if necessary can be included at a later date.

Repatriation Dental Service.

The two Vice-Presidents reported on the satisfactory results of their conferences with the Chairman of the Repatriation Commission and Senior Officers in Melbourne.

The replies from the Branches regarding a suggested scale of fees was considered with great care and a composite scale, embodying the requirements of all Branches, was drafted for submission to the Federal Treasury, and arrangements made for further action.

Constitution Re-draft.

Considerable time was devoted to alterations suggested by Branches and the legal opinion thereon. It was resolved to circulate these

amendments and request early finalisation from the Branches in order that a special meeting can be convened to make the redrafted Constitution operative after the Annual General Meeting.

National Health and Medical Research Council.

The President reported having attended the 31st Session of the Council, which was held in Sydney on 23rd and 24th May, 1951. He stated that the application by Dr. N. E. Goldsworthy, Director of the Institute of Dental Research, for £2,865 for fluorine survey was deferred, pending the return of Dr. Goldsworthy from abroad.

The President also reported that the following resolution had been passed at the meeting:

"Standards for Dental Materials.

This Council is of the opinion that the purchase of dental supplies for Commonwealth and State Government Departments should favour, whenever possible, the selection of dental products certified by the Standards Association of Australia and the Bureau of Dental Standards as complying with Australian Dental Standards, and that the necessary information on this subject should be circulated."

Financial Position of the Association.

After full consideration of a budget and report submitted by the Honorary Treasurer, in which it was pointed out that the Federal Office was receiving generous terms of accommodation and service from the N.S.W. Branch, and that minor economies had been effected to combat the rising costs, it was resolved that the Federal Officers consider that some increase in revenue will be necessary in the coming year to meet commitments and that the State Branches be asked to consider whether the increase should be made by means of capitation fees or by levy, as necessity arises.

Yours faithfully,

J. V. HALL BEST,
President.

NEW SOUTH WALES BRANCH

EXECUTIVE MEETINGS

Extract from the Minutes of the Meeting of the Executive Committee held in the Council Room, B.M.A. House, 135 Macquarie Street, Sydney, on Monday, 13th August, 1951, at 7.30 p.m.

Present: Dr. E. R. Magnus, President, in the Chair; Mr. F. R. Reid, Honorary Treasurer; Dr. E. H. Bastian, Mr. N. E. Edney, Mr. H. M. Finnie, Mr. J. G. Fletcher, Mr. E. J. Gee, Mr. A. G. Hunter, Mr. R. Krauss, Mr R. Goodwin Leeder, Mr. R. Y. Norton, Mr. R. Tompson, Mr. R. W. Wilson; Mr. M. J. Griffin, Blue Mountains Division; Mr. C. D. Reynolds, Newcastle & Hunter River District Division; Dr. J. D. Oddy, South Coast Division; Mr. G. M. Cox, Southern Division; Dr. A. G. Rowell, Western Division.

Apologies: Mr. W. A. Grainger, Dr. F. E. Helmore, Dr. A. G. H. Lawes.

In attendance: Mr. E. F. Hewlett, Secretary.

Minutes: The minutes of the meeting held on 17th July, 1951, were signed as a correct record, subject to a minor correction.

Business Arising from the Minutes:

Articles of Association: Subsequent to the amendments to the Articles of Association having been considered at previous meetings, it was indicated that the Association's Solicitor had now prepared the final amendments and these amendments were approved.

Industrial matters: The Secretary reported that the Association's application for the variation of the Dental Assistants and Secretaries (State) Award, to provide conditions of employment of part-time and casual employees, had been prepared and forwarded to the industrial authorities.

He further reported that variations in award wage rates arising from the recent rise in the basic wage had been circularised to members.

Business of the Meeting:

The revised Federal constitution: The Executive gave further attention to the amendments to the Federal constitution.

Reports from Committees:

Dental Health Committee: The Chairman of this Committee reported that arrangements were being made for the publication of additional copies of "Toothbrush Technique" and requested the Association's assistance in this matter. Such assistance was granted.

The Chairman further reported that the Dental Health Committee desired to recommend to the Executive that this State Branch express approval in principle of the controlled fluoridation of public water supplies for the partial prevention of dental caries. The Executive resolved that this recommendation be adopted and that the resolution be conveyed to the Federal body requesting that other State Branches be circularised.

Library Committee: The Chairman of the Library Committee reported that his Committee recommended that the following two books be purchased:

McGehee *et al.*, Operative Dentistry, 3rd edition.

Coolidge, Endodontia, 1950.

This recommendation was adopted.

Sports and Social Committee: The Chairman of this Committee reported that the Annual Sports Day of the Association held on 2nd August, 1951, had been a marked success. The day had resulted in a surplus of £17 3s. 10d.

It was resolved that the Sports and Social Committee be congratulated on their efforts and that the surplus be transferred to the Benevolent and Provident Fund.

Post-Graduate Courses Committee: Certain recommendations from the Post-Graduate Courses Committee were considered and it was decided to circularise members asking them to intimate their willingness to join study groups and calling for suggestions as to subjects of particular interest.

Membership:

New members: It was resolved that the following dental practitioners whose applications were in order and who had paid the requisite subscriptions be admitted as members of this State Branch as from 13th August, 1951:

Chandler, Boyd, B.D.S.; Bullock, Peter Howard, B.D.S.; Lyon, Wilfred Fraser, B.D.S.; Milton, John Ernest, B.D.S.; Neal, Marshall Stanley, B.D.S.; Titley, Keith Felgate, B.D.S.; Watters, Allan Robert, B.D.S.

Student associates: It was resolved that the following Fourth Year students, whose applications were in order and who had paid the requisite subscriptions, be admitted as Student Associates of this State Branch for the year 1951:

Cross, Robert Buchan; Butt, Sydney Graham; McEwan, Malcolm Alexander; Nevell, Ian Vincent.

Deceased: It was noted with regret that Mr. A. A. Wilson and Mr. W. M. Barkley had died recently.

Reports from Conjoint Meeting of the Delegates from Divisions and Executive Committee:

Fees for hospital dentures: The recommendation that approaches be made to raise fees for dentures for necessitous persons and fees for dental services to all State institutions be raised to those decided upon by the Federal Executive for repatriation personnel was discussed, and the recommendation was adopted.

Dental supplies from dollar areas: The matter of dental supplies from dollar areas was further discussed, and it was decided that the Association should ascertain the requirements of the profession in this regard.

Priority on railways: It was decided to approach the Transport Department to obtain priority for dental supplies during the restriction on the carriage of goods.

Divisional constitutions: The recommendation of the Conjoint Meeting that existing Divisional constitutions be reviewed, was adopted.

Apprentices in dental technology: A committee of three, consisting of Mr. Krauss, Dr. Bastian and Dr. Graham, was appointed to consider the question of apprentices in dental technology.

Advice on dentistry and dental health to migrants: The matter of advice on dentistry and dental health to migrants was considered and the matter was referred to the Federal body.

Sale and valuation of practices and employment of assistants: A sub-committee of three, consisting of Mr. F. R. Reid, Mr. R. Goodwin Leeder and Dr. J. D. Oddy, was appointed to consider matters arising in the sale and valuation of practices and the employment of assistants.

Financial Statement:

The Honorary Treasurer, Mr. F. R. Reid, tabled the financial statement for the month of July, 1951, which had been circulated to members of the Committee, and it was resolved that this statement be received.

Closure of meeting: The meeting terminated at 10.45 p.m.

Extract from the Minutes of the Meeting of the Executive Committee, held in the

Assembly Hall, B.M.A. House, 135 Macquarie Street, Sydney, on Monday, 10th September, 1951, at 7.30 p.m.

Present: Dr. E. R. Magnus, President, in the Chair; Dr. A. G. H. Lawes, Vice-President; Mr. F. R. Reid, Honorary Treasurer; Dr. E. H. Bastian, Mr. N. E. Edney, Mr. H. M. Finnie, Mr. J. G. Fletcher, Mr. E. J. Gee, Mr. W. A. Grainger, Mr. A. G. Hunter, Mr. R. Goodwin Leeder, Mr. R. Y. Norton, Mr. Ralph Tompson, Mr. R. W. Wilson; Mr. M. J. Griffin, Blue Mountains Division; Mr. C. D. Reynolds, Newcastle & Hunter River District Division; Dr. J. D. Oddy, South Coast Division; Dr. A. G. Rowell, Western Division.

Apologies: Dr. F. E. Helmore, Mr. R. Krauss.

In attendance: Mr. E. F. Hewlett, Secretary.

Minutes: The minutes of the meeting held on 13th August, 1951, were signed as a correct record.

Business Arising from the Minutes:

Articles of Association: The President informed the meeting that the proposed amendments to the Articles of Association were now under perusal by the Crown Law authorities, as this was necessary to enable their presentation to the General Meeting of the Association and then to the Executive Council.

Industrial matters: The Secretary reported that the Association's recent application for a variation of the Dental Assistants and Secretaries (State) Award had been dealt with and that the Award had been varied; members would be circularised concerning same.

A committee of three was appointed to deal with matters arising from the fact that the present Dental Assistants and Secretaries (State) Award expired in December, 1951.

Business of the Meeting:

Federal Office: Newsletter No. 4 and the minutes of the meeting of the Federal Executive of 21st July, 1951, were reviewed and received.

Reports from Committees:

Progress reports on matters under their care were received from the Dental Health Committee, Journal Committee, the Illegal Practice Investigation Committee and the Committee on the Annie Praed Oration.

Membership:

New member: It was resolved that the following dental practitioner whose application was in order and who had paid the requisite subscription be admitted as a member of this State Branch as from 10th September, 1951:

Rea, Norman William, B.D.S.

Resignations: The following resignations as from 31st December, 1951, were accepted:

Cattle, Gordon; Piper, Brian James.

Deceased: It was noted with regret that Mr. C. E. Rawe had died recently.

Financial Statement:

The Honorary Treasurer, Mr. F. R. Reid, tabled the financial statement for the month of August, 1951, which had been circulated to members of the Committee, and it was resolved that this statement be received.

Staff:

Resignation of Assistant Secretary: The resignation of Miss H. E. Harrington as Assistant Secretary was received with regret.

General Business:

General Meetings: It was resolved that the next General Meeting be held on 20th September and the following meeting on 16th October.

Closure of meeting: The meeting terminated at 10 p.m.

Extract from the Minutes of the Meeting of the Executive Committee held in the Council Room, B.M.A. House, 135 Macquarie Street, Sydney, on Monday, 8th October, 1951, at 7.30 p.m.

Present: Dr. E. R. Magnus, President, in the Chair; Dr. A. G. H. Lawes, Vice-President; Dr. F. E. Helmore, Vice-President; Mr. F. R. Reid, Honorary Treasurer; Dr. E. H. Bastian, Mr. H. M. Finnie, Mr. J. G. Fletcher, Mr. E. J. Gee, Mr. W. A. Grainger, Mr. R. Krauss, Mr. R. Goodwin Leeder, Mr. R. Y. Norton, Mr. R. Tompson, Mr. R. W. Wilson; Mr. M. J. Griffin, Blue Mountains Division; Mr. C. D. Reynolds, Newcastle & Hunter River District Division; Dr. J. D. Oddy, South Coast Division; Dr. A. G. Rowell, Western Division.

Apologies: Mr. N. E. Edney, Mr. A. G. Hunter.

In attendance: Mr. E. F. Hewlett, Secretary.

Minutes: The minutes of the meeting held on Monday, 10th September, 1951, were signed as a correct record subject to one correction.

Business Arising from the Minutes:

Appointment of Assistant to the Secretary: Miss I. Dent was appointed as from 24th September, 1951, as Assistant to the Secretary,

consequent upon the resignation of Miss H. E. Harrington.

Business of the Meeting:

Federal Office: Notice having been received from the Federal Office that the Annual General Meeting of the Australian Dental Association would be held on Saturday, 27th October, 1951, the meeting proceeded to receive and discuss the Annual Report, Treasurer's Report and Balance Sheet of the Federal body.

The Executive Committee elected Dr. E. R. Magnus and Dr. A. G. H. Lawes as this State Branch's delegates to this Annual Meeting and requested the Federal body that Mr. E. F. Hewlett, Secretary of the State Branch, attend such meeting as an observer.

Matters on the agenda for this Annual Meeting were discussed and the delegates were instructed in this State Branch's attitude towards such matters.

Special Meeting of the Australian Dental Association: Notice was received that a special meeting of the Australian Dental Association would be held immediately following the above Annual General Meting to deal with the revised Federal constitution.

The above delegates were instructed in this matter.

Reports from Committees:

Dental Health Committee: The Chairman of this Committee reported that the publication of a further 26,000 copies of the booklet "Your Baby's Teeth and Your Own" had been undertaken with the assistance of the firm who had previously assisted in this matter. It was resolved that the Committee's action be approved.

He further reported that during Newcastle Health Week the Association had been represented and that lecturers approved by the Association had given numerous lectures during that week.

He indicated that an essay competition amongst the cadets of the R.A.A.F. College had resulted in the receipt of a number of essays of high standard, and recommended that the suggested prize of £5 5s. 0d. be paid to the successful essayist. This recommendation was adopted.

The Chairman further outlined the arrangements which the Dental Health Education Department had made for its co-operation during National Health Week, stating that lectures would be arranged and that the Dental Health Exhibit would be shown during the Health Week Exhibition at the Town Hall and that a further exhibit would be prepared for an exhibition at Ryde Town Hall.

Sports and Social Committee: The Chairman of the Sports and Social Committee reported that it was proposed to receive a return sporting visit from members of the Queensland Branch of the Association early in February, 1952.

Library Committee: The Library Committee recommended and it was resolved that the following book be purchased:

> Comroe, Collins & Crane: Internal Medicine in Dental Practice, 3rd edition.

Divisions Committee: The Chairman of the Divisions Committee, Mr. Krauss, reported on the success of the Armidale Convention.

Various Committees: The Chairmen of the Benevolent and Provident Fund Committee, Illegal Practice Investigation Committee, Committee on Apprentices in Dental Technology, Post-Graduate Courses Committee and Syllabus Committee made progress reports on the activities of their Committees.

Membership:

New members: It was resolved that the following dental practitioners whose applications are in order and who have paid the requisite subscriptions be admitted as members of this State Branch as from 8th October, 1951:

Hallinan, Laurence Thomas, B.D.S.; Kelly, Robert James, B.D.S.; Noble, Charles Davidson, B.D.S.; Orr, Timothy James, B.D.S.; Stuart, John Norman, B.D.Sc.

Financial Statement:

Mr. Reid, the Honorary Treasurer, tabled the financial statement for the month of September, 1951, which had been circulated to members of the Committee, and it was resolved that this financial statement be received.

General Business:

Annual General Meeting: It was resolved that the date of the Annual General Meeting be Tuesday, 27th November, 1951.

Election of Executive: It was resolved that the various dates in connection with the election of the Executive be left in the hands of the Secretary as Returning Officer, to comply with the requirements of the Articles of Association.

Closure of meeting: The meeting terminated at 12 midnight.

New Books and Publications

Essentials of Oral Surgery, by V. P. Blair, R. H. Ivy, and J. B. Brown, St. Louis, 1951. *4th edition.* The C. V. Mosby Company. Price £4 4s. 0d. *Our copy by courtesy of W. Ramsay (Surgical) Pty. Ltd., Melbourne.*

"Essentials of Oral Surgery" has for many years served as a useful text and reference book and so one would look forward to reading this new edition, containing 18 additional illustrations and 12 additional pages of text. However, the reader is disappointed in that, although treatment of a number of conditions has been brought up to date, in others the prescribed methods are lagging behind.

Mention of such innovations as the "3 minute scrub" with pHisoderm—Hexachlorophene, "Tulle gras" in treatment of burns, split skin (Thiersch) grafts, the use of penicillin and streptomycin in syphilis and tuberculosis is commendable. But the authors still adhere to the "seeds and grasses" etiology of actinomycosis and iodide treatment thereof in spite of reports recently published in this country and overseas showing *Actinomyces bovis* to be normal flora in certain individuals and the efficacy of chemotherapy in treatment. Their reference to cases "recently treated successfully" by iodide is dated 1935.

The section on antibiotics including streptomycin, aureomycin and chloromycetin occupies eight more lines than did pencillin alone in the third edition, and whilst mention is made of oxidised cellulose in the treatment of haemorrhage, there is no reference to gelatin sponge or sodium alginate, both of which have come into prominent and effective use in recent times. Dakin's solution has been replaced by saline solution in irrigation of infected wounds. The dental handpiece is "sterilized" for oral surgery "by dipping in alcohol and burning off in the flame."

In the chapter on fractures, vulcanite is still referred to as the base for Gunning splints and dentures. No reference is made to fixation of fractures—especially in the edentulous mandible—by Kirschner wire. Treatment of subluxation of the temporomandibular joint includes mention of mechanical trauma to the joint surfaces, but no place is given to the injection of chemical sclerosing solution which has been reported as successful.

Mention is made of perforation of the nasal floor by pointing of abscess from the upper incisor teeth. The reviewer has seen on several occasions patients with marked inflammatory swelling in the upper lip for which dental origin could not be found, the ultimate diagnosis being a furuncle within the nasal mucous membrane.

Errors noted include incorrect cross reference in the caption to Fig. 433 and reference to a ½ in. needle instead of a 1½ in. needle in page 594. Both of these errors are repeated from the third edition.

It is felt that in such a useful textbook revision of general principles, where many "recent" references date back 15 and 20 years, should hold a higher place than the highly specialised treatment of cleft palates, etc., the chapter on which accounts for ten of the extra pages and thirteen of the extra illustrations.—T.R.C.

Information from the Dental Boards

NEW SOUTH WALES

Extract from the Minutes of the Meeting of the Dental Board held on Wednesday, 26th September, 1951.

Present: Dr. J. S. Baird, President; Professor A. J. Arnott, Mr. G. R. Cameron, Mr. N. E. Edney, Dr. A. G. H. Lawes and Dr. E. R. Magnus.

Apologies: Mr. E. B. Cahalan, Dr. H. G. Wallace.

Confirmation of Minutes: The minutes of the ordinary meeting held on 29th August, 1951, and special meeting held 21st September, 1951, were confirmed as read at the meeting.

Applications for registration: Timothy James Orr, B.D.S., University of Sydney, 1951; John Norman Stuart, B.D.Sc., University of Melbourne, 1951.

These applicants appeared in person in connection with their applications for registration which, being in order, were granted under Section 10 (1) (a) of the Act, together with approval to use the description shown.

Application for restoration: Reginald Tysoe Wilkinson. Registration approved.

Business Arising:

Dental Board loans: It was decided that the draft statement prepared by the Registrar be approved and that it be forwarded to the University authorities for publication in the Faculty of Dentistry Handbook, student publications and for information of the male and female Guidance Officers.

Publicity in Journals: The Registrar informed the Board that arrangements for supplying the Australian Dental Association with approved matter for publication were now in force.

Loan documents for signature: These were signed by members present.

SOUTH AUSTRALIA

The following is a resume of the proceedings of the Dental Board of South Australia for the year ended 30th June, 1951.

No other nominations for the three vacancies on the Board having been received, the retiring members, Drs. M. W. Evans, C. B. Maddern and Mr. F. H. J. Fischer were declared elected, the Board then consisting of Dr. A. P. R. Moore (President, nominated by the University), Dr. W. J. Close (nominated by the British Medical Association) and those dentists abovenamed.

Applications for registration have been granted as follows:

Brown, Kenneth Aylesbury, B.D.S., Adelaide; Brown, Tasman, B.D.S., Adelaide; Clements, Trevor Murray, B.D.S., Adelaide; Coombe, Robert John, B.D.S., Adelaide; Daenke, Lachlan Lewis, B.D.S., Adelaide; Dunstan, Ian Henderson, B.D.S., Adelaide; Hodgson, Ian Harold, B.D.S., Adelaide; Hood, Vivian George, B.D.S., Adelaide; Hughes, Florence, B.D.Sc., Melbourne; Kennare, Hugh Daley, B.D.S., Adelaide; Lake, Blair Hingston, B.D.S., Adelaide; Leach, Raymond Basil, B.D.S., Adelaide; Martin, Trevor Wallis, B.D.S., Adelaide; Muirhead, Andrew MacKinnon, B.D.S., Adelaide; Nicholas, Herbert Ahearn, B.D.S., Adelaide; Phillips, Basil Wright, B.D.S., Adelaide; Pynor, Donald Edward, B.D.S., Adelaide; Reiners, John Alexander, B.D.S., Adelaide; Ronald, Ian Douglas, B.D.S., Adelaide; Sims, Mitton Reginald, B.D.S., Adelaide; Smart, Laurence Maxwell, B.D.S., Adelaide; Stanton, Robert Anthony, B.D.S., Adelaide; Thomson, Leonard Arthur, B.D.S., Adelaide; Trott, John Richard, B.D.S., Adelaide; Vawser, Paul, B.D.S., Adelaide; White, Francis Richard, B.D.S., Adelaide.

The following names were removed from the Register on account of death:

Hutton, William; Johns, Albert Edward.

The Balance Sheet and Revenue Account for the past year were duly presented and adopted.

Prosecutions and legal proceedings.

Messrs. E. C. Horsell and A. Mensforth were prosecuted in the Police Courts for illegal practice, neither of them being a registered dentist. Horsell was fined £25 and £6 2s. 6d. costs. Mensforth was fined £15 with £2 12s. 0d. costs.

J. R. Badcock, a registered dentist, was proceeded against for exhibiting a sign outside his premises while his registration was under suspension for not having paid his annual fee. He was fined £8 and £2 12s. 0d. costs.

The case of Horsell is interesting in that the Act provides that "no one except a registered dentist shall practise dentistry for *fee or reward*." Horsell pleaded that he had not received any fee or reward, which was not disputed. The Magistrate in a reserved judgment held that the actual receipt of a fee was not essential so long as the operation was entered into with the expectation of fee or reward.

The Board investigated circumstances connected with the death of a boy under anaesthetic whilst being operated upon for tooth extraction by a licensed operative. After consideration of the evidence submitted at the inquest, it was decided to take no action.

The Board has received many complaints regarding illegal practice and is making a considerable effort to suppress such activities. However, sufficient evidence for successful

legal action in these cases is very difficult to obtain and the Board once again requests that dentists should report to the Registrar the names of any persons coming under their notice who have had work done by illegal practitioners within the last six months. The name of the dentist supplying such information remains completely confidential and the dentist is not required to give any evidence whatsoever in connection with subsequent investigations.

Dental Education.

After some negotiations, the Minister for Education has agreed to make strip films for dental educational purposes in State Schools. Mr. W. M. T. Marshman has been asked to prepare suitable matter for these films.

One hundred and fifty sets of nursery frieze pictures published by the Dental Board of United Kingdom for child education have been ordered and are to be distributed to the Kindergarten Union and State Infant Schools.

The Board has donated funds to the University for the appointment of a Research Scholar to conduct an examination of the fluorine content of the potable waters of the State.

Mr. A. P. Plummer, B.D.S., was appointed to the scholarship and his first report has been received. It shows a high fluorine content in the drinking water of the Naracoorte district and it is proposed to conduct a survey of the dental conditions in that area.

During the period, the Dental Board prize for the undergraduate obtaining the highest credit in the fourth year of the B.D.S. course was awarded to John Desmond McKinnon.

Immigrant Dentists.

The Board has numerous enquiries from foreign dentists wishing to emigrate to Australia. As there are no foreign degrees qualifying the holders to registration here, these persons are required to acquire some U.K. or Australian degree, but some arrive without making any enquiries and are inclined to agitate in the same direction as has been done in the medical profession.

The Board has from time to time received complaints of overcharging by dentists, and it feels that if dentists would inform their patients if any work to be done is likely to involve any charge which might be considered above normal it would help to lessen the frequency of the complaints.

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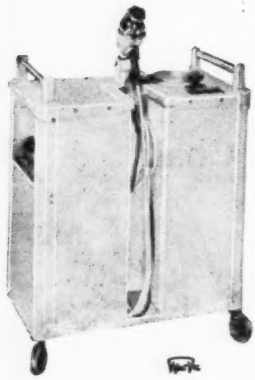

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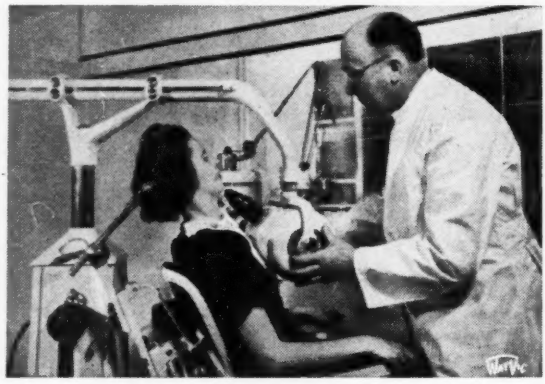

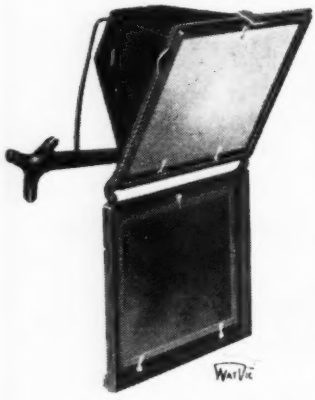

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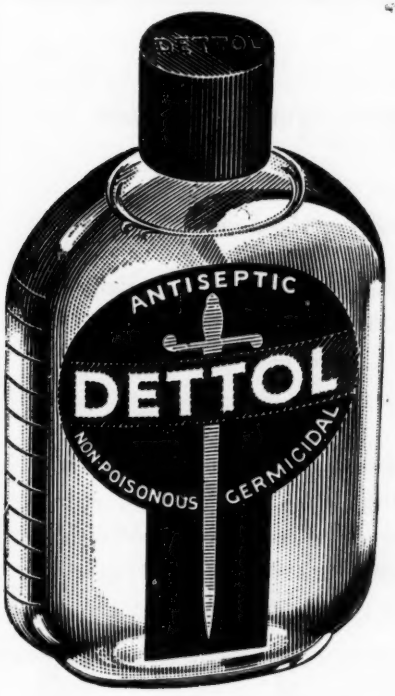

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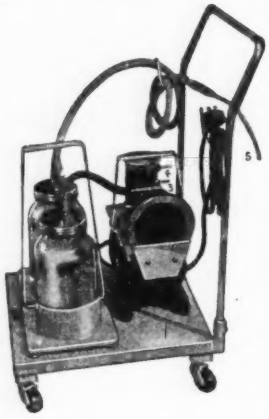

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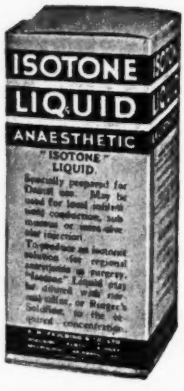

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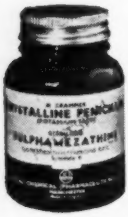

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(1) Kramer, B, et al — Am. Dis. Child. 73 543 (1947).
(2) Lewis, J. M. et al — J. Pediat 31 496 (1947).

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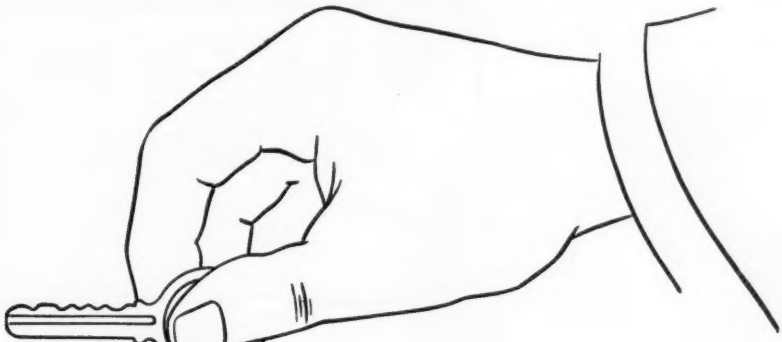

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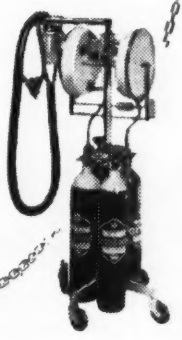

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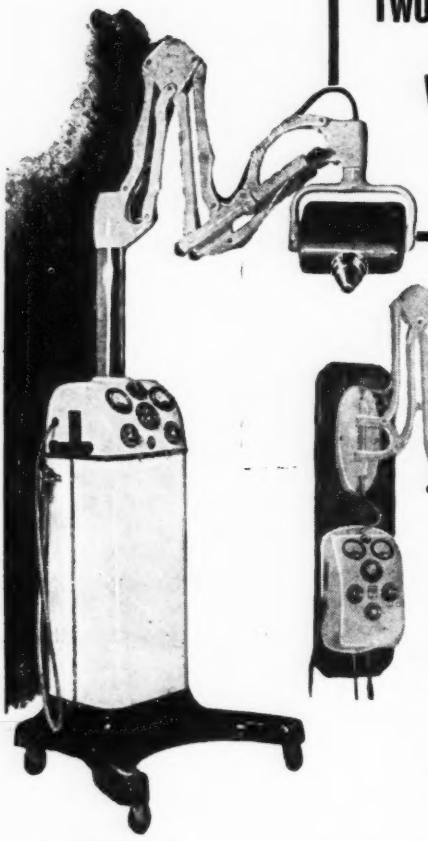

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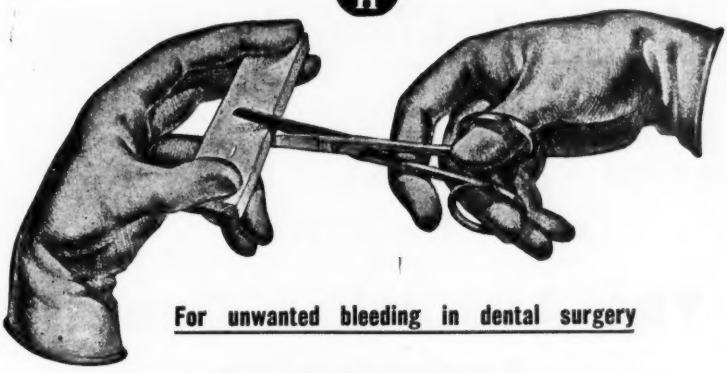

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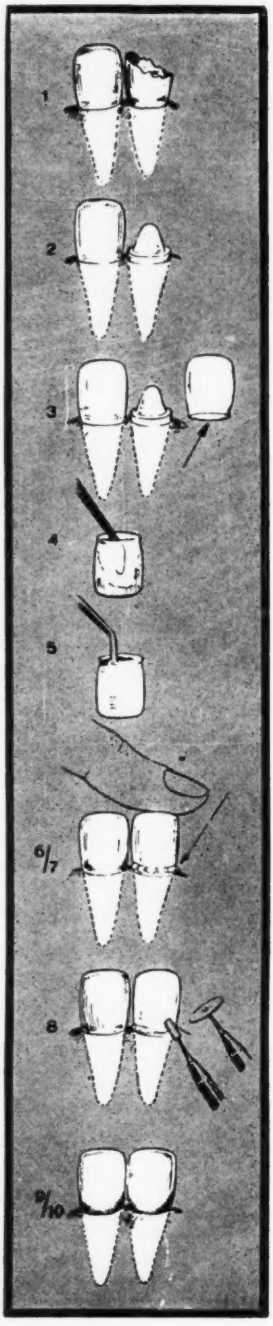

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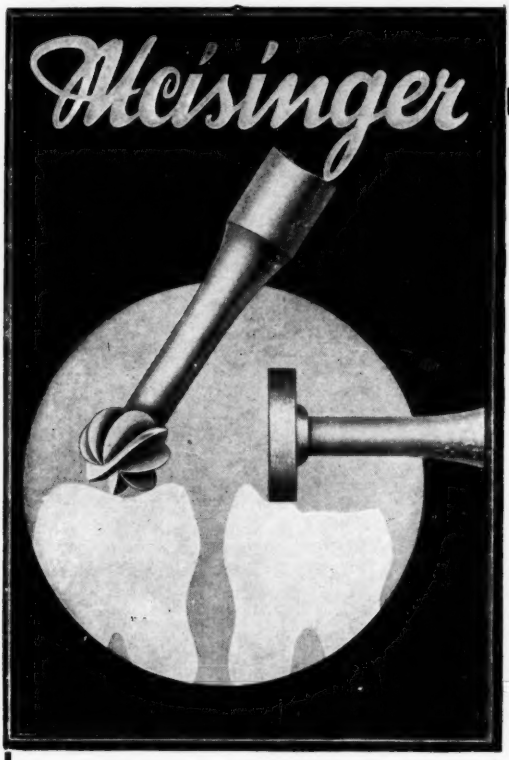

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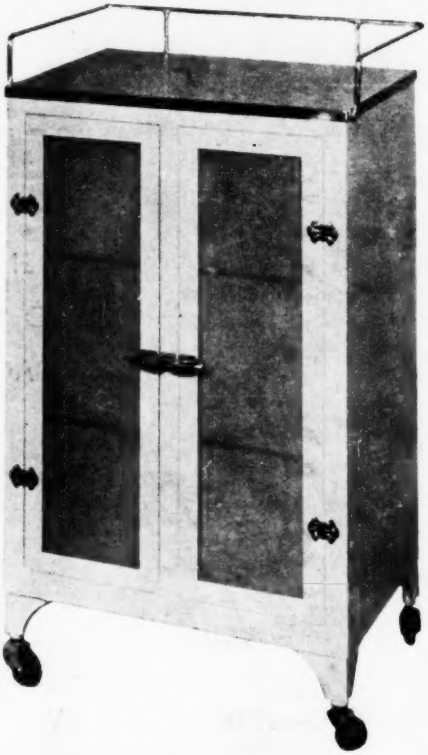

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